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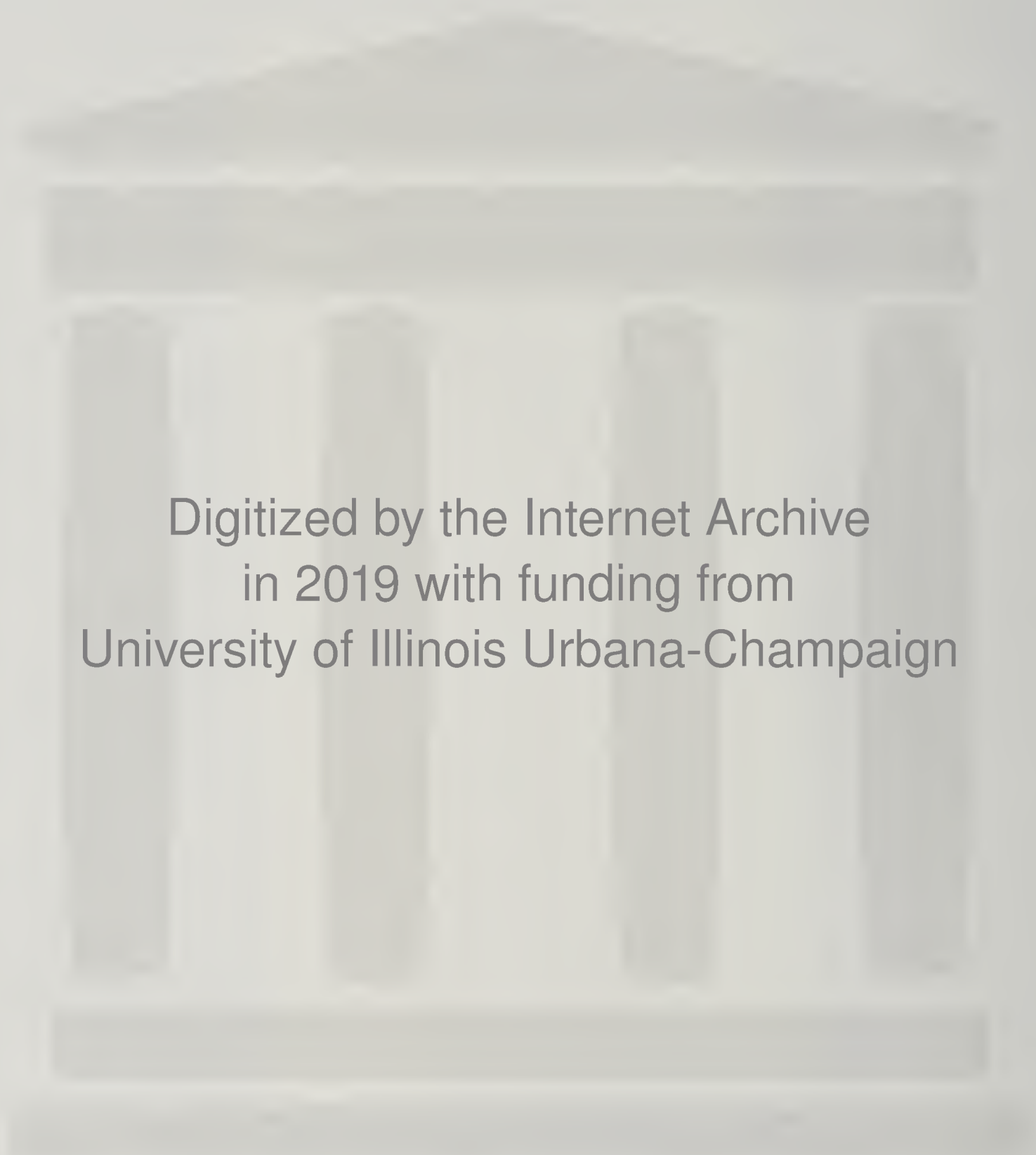
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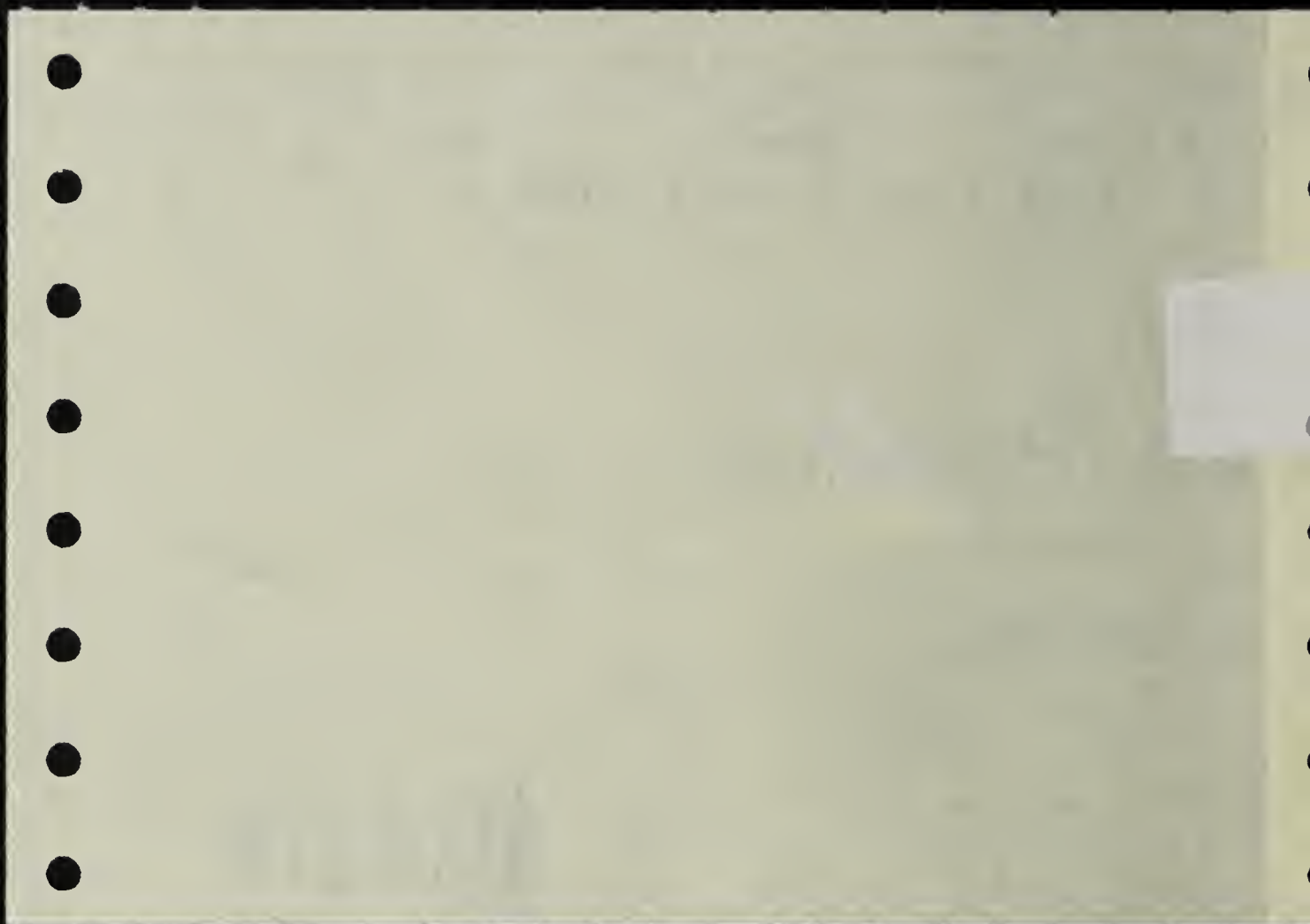
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BRICK

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VOL. XXXIX
No. 1.

CHICAGO, JULY 1, 1911

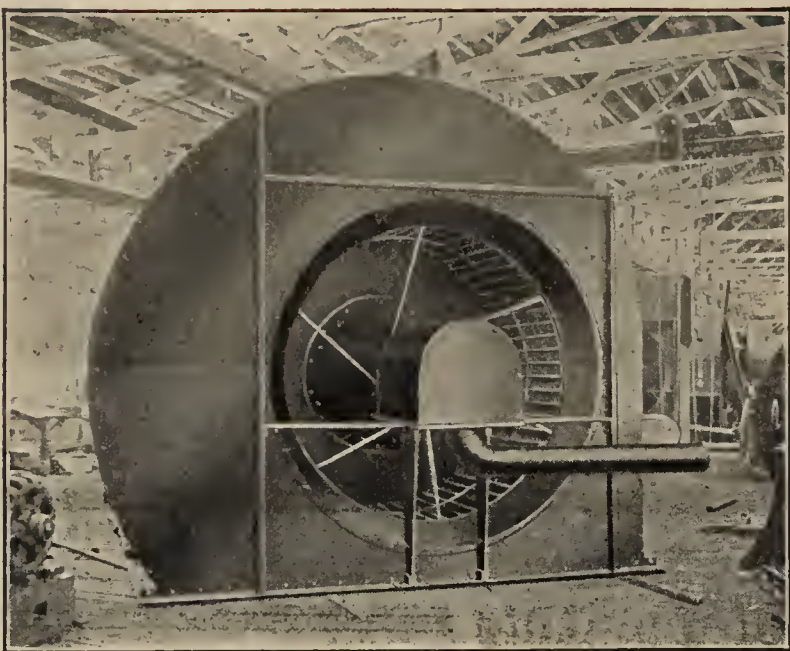
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Table of Contents

Page	Page
Concrete Building Damaged by Electrolysis Frontispiece	The Paving Brick Industry—Signs of Pros- perity—Ohio Road News..... 20
Reinforced Concrete Damaged by Electroly- sis. Harold P. Brown..... 3-8	Drain Tile and Drainage—Drain Tile Cost Accounting. C. B. Platt—Need of Standard Specifications.....21-22
Giant Brick Consolidation—Greater New York Brick Co. Allen E. Beals..... 9-11	Fire Brick and Refractories—Prosperous Maryland Plant.....23-24
National Building Material Exhibition.... 11	Sewer Pipe News—Prices Advanced—Vitri- fied Pipe vs. Concrete.....25-27
Thriving Iowa Industry—Des Moines Clay Mfg. Co. 12	New Pug Mill..... 28
Residence of Mr. Brickhouse..... 13	Sand-Lime Department—Kentucky Sand- Lime Plant—Sand-Lime Figures..... 29
Editorial Comment—Our Flag Abroad..... 14	Frost Engine Demonstration..... 30
Time by the Forelock—Land Snow..... 15	Flexible Reversible Boxing..... 30
An Armful of Bouquets..... 16	Plant of the Standard Dry Kiln Co..... 31
Superintendent—Legal Decision—Shutting Down a Plant—Electric Installations..17-18	Trade Review—City of Brotherly Love— Buckeye State—Lone Star News, Etc..32-38
Burners' Corner—Some Burning Comments —Burning Records..... 19	

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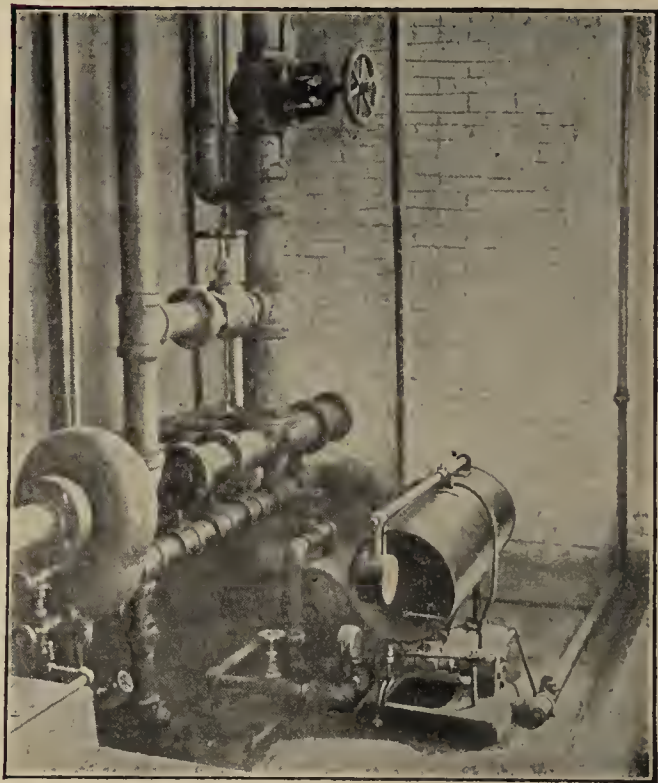
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VOL. XXXIX—No. 1

BRICK

AND CLAY RECORD



JULY 1, 1911

REINFORCED CONCRETE SERIOUSLY DAMAGED BY ELECTROLYSIS

Investigations by Mr. Harold P. Brown, M. Am. Electro-Chem. Soc., Result in Startling Revelations in Regard to Dangers of Concrete Construction

The following article by the well-known engineer, Harold P. Brown, which appeared in the leading engineering journal "Engineering News," makes startling revelations as to the dangers of concrete construction. Mr. Brown's investigations would indicate that reinforced concrete buildings where electricity is used, are in danger of disintegration by electrolysis and that such disintegration may occur at any time without warning.

are now well understood, few have imagined that electrolysis could possibly injure a building of modern reinforced concrete. On the contrary, many papers have been written to prove how thorough a protection is given to steel by properly applied concrete.

It is also well known that not long ago electrolysis destroyed the lower ends of the foundation bolts of a number of elevated railway columns where the current was

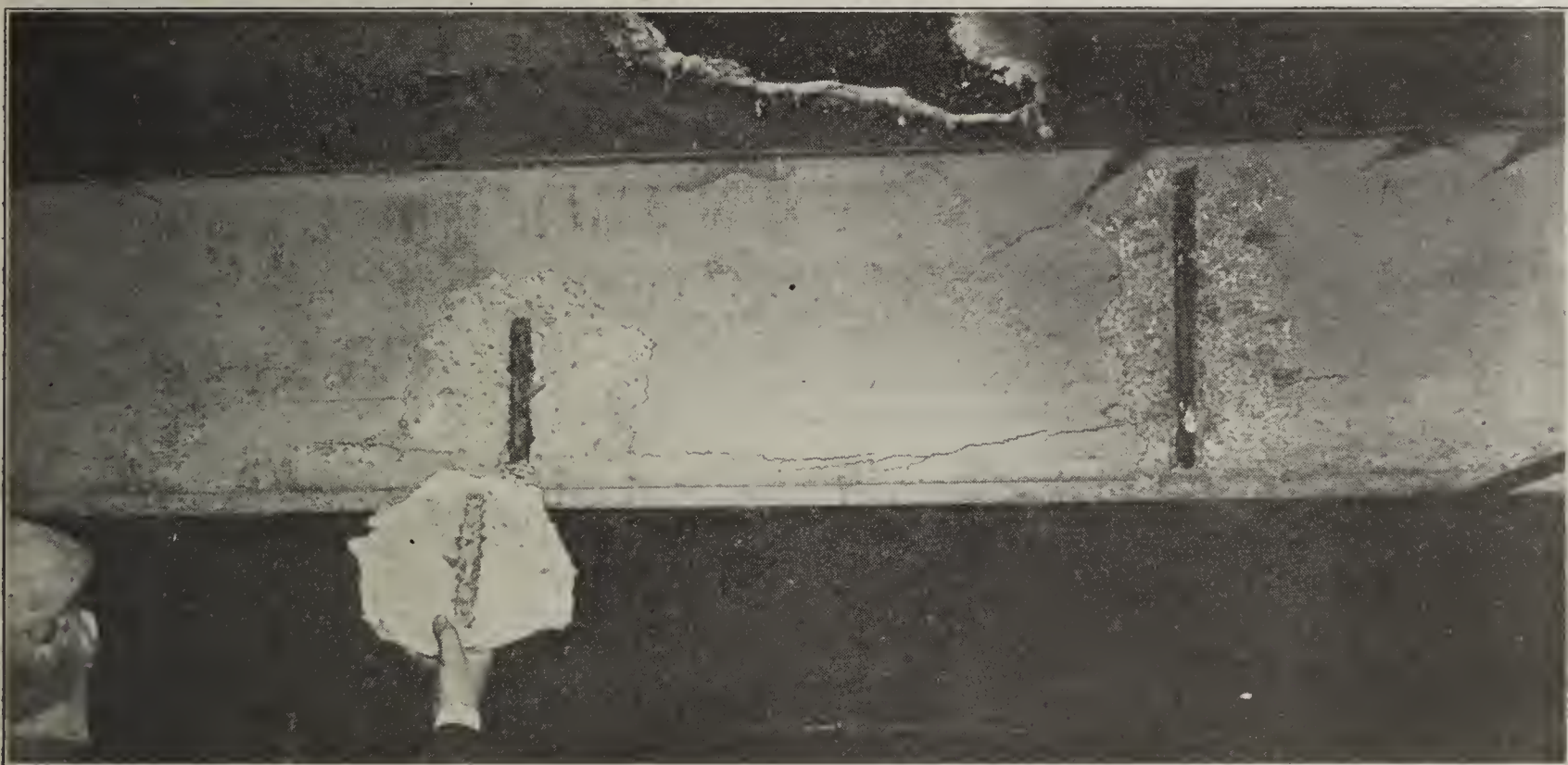


Fig. 4. Concrete Forced Off at Stirrup of Beam.

It is believed that these investigations have dealt a death blow to concrete building on a large scale, as the remedies which might prevent the danger from electrolysis are so expensive and uncertain as to make their use practically impossible in the construction of large buildings.

Engineers are familiar with the corrosion of buried water pipes by electric railway current returning to the power house from poorly bonded track, and they generally look for the area of injury near the power house or sub-station, where the current leaves the pipes on its way to the negative terminal of the dynamo. The metal surface of the pipes at the point of departure is covered with a layer of iron rust beneath which is found characteristic pitting. While the cause and cure of this trouble

carried on the structure. It was accordingly feared that the same might happen to buildings of structural steel. But none thought it possible that electricity could leak to steel deeply buried in beams and girders, and split the concrete apart. Yet this is exactly what has occurred in thousands of feet of concrete, and engineers who design concrete structures must take new precautions to secure safety and permanence.

During the past few years there have been persistent rumors of injury of this kind to large and expensive concrete structures, and these rumors have led to various laboratory experiments in this line which have been reported at great length. Letters of inquiry have also been sent out asking full particulars concerning the behavior of reinforced concrete, but for obvious reasons the archi-

teets, designing engineers and owners of damaged buildings have not cared to reply, and it has therefore been wrongly inferred that no cases of failure have been caused by electrolysis.

A few weeks ago the writer was asked by the president of a prominent electric railway to examine a large re-



Fig. 2. Cracks in Lower Part of the Girder.

inforced concrete packing house not far from New York, where it was claimed that the railway return current had caused great injury. It was stated that a dozen or more prominent experts had been called in by the owners of the building and had advised a suit against the railway whose power house is located about 300 feet to the north. The building was completed in October, 1906, and comprises a number of connecting structures of three, four and five stories and basement, with about 300,000 square feet of floor space. In the summer of 1907 horizontal cracks appeared on the lower surface of various beams and girders parallel with the reinforcing steel, and these have steadily grown worse.

Permission was readily given to visit the building and to photograph the damaged portions. There could be no question about the amount and serious nature of the damage, for over 3,000 lin. ft. of girders and beams showed wide cracks two inches deep, reaching from their lower surfaces to the round steel rods of the reinforcement. Seven columns had deep vertical cracks in line with the rods, some of these penetrating to a depth of four inches and forcing off large pieces of concrete. In many places the outer surfaces of the rods were entirely exposed, and were seen to be covered with a layer of tough iron oxide (hydrated oxide of iron), from $\frac{1}{8}$ to $\frac{1}{4}$ -inch thick. This oxide had evidently forced the concrete apart and caused the damage. Figs. 1, 2 and 3 show characteristic cracks and exposed rods in beams and girders of the cooling rooms on the first story. In every case the most serious injury is underneath rooms cooled by refrigerating pipes which of course keep the floor and its supports constantly damp. But in this area there is not a crack in any floor slab, since its reinforcing steel is not electrically connected with that in the girders.

The writer agreed to make a thorough electrical examination of the building for the railway, on condition

that the electrician representing the owners should verify each observation and measurement, and full and exact details be dictated to a stenographer at the time when readings of the instruments were made. In this way no controversy could arise over the recorded facts, although each party might have his own interpretation.

The electrician for the packing company had been at work for six or seven weeks and had run test wires from a central point to the reinforcing rods in various parts of the building. He was firmly convinced that the railway current had caused the trouble, and willingly set out to prove his views. Double tracks of the electric railway pass in front of the building and a single track leads on one side of it to the adjoining power house of the railway company at the rear. With this location it did look as though there might be some basis for the accusation against the railway current, provided the injury was shown to be caused by current flowing to the north on the cellar girders, or flowing downward on the cellar columns on its way to the power house. Such current, however, could not be found.

The electrician showed that the city water pipes across the street from the building indicated occasionally a pressure of about $6\frac{1}{2}$ volts positive to the rails on that street, which was bad for the pipe. This was due to a broken connection on the railway return circuit, which has since been corrected. The city pipe was about $4\frac{3}{4}$ volts positive to a local water pipe from the building, crossing the street to the packing house stables. The local pipe was $1\frac{1}{4}$ inches in diameter, and where it entered the south basement wall of the building, there was clear evidence that it brought in railway current on its way towards the power house. This pipe had an unbroken length of 20 feet and was insulated from the basement ceiling by wooden wedges thrust between it and the clamps supporting it. A Weston laboratory type voltmeter with a swing of $\frac{7}{8}$ inch to a milli-volt, showed a maximum drop of $1\frac{1}{2}$ milli-volts in the 20 feet, with current less than 0.8 amp.



Fig. 7. Typical Beams Affected by Electrolytic Action.

The same instrument showed that this pipe was $3\frac{3}{4}$ milli-volts positive to the reinforcing steel, which is far too small a pressure to do any damage, as is shown by the quotation from Mr. O. P. Watts below.

Another instrument indicated a drop of 110 volts between the positive wire of the electric light circuit and this pipe. This showed a bad ground on the negative side of the circuit, and here was really the key to an explanation of all the trouble.

The pipe turned upward from the 20 foot length through the concrete floors to a tank on the roof, but no electric current upward could be found in it above the first floor. The railway current of less than one ampere evidently passed into the damp concrete floor and into the adjoining iron work of a four-story smoke house and could not be found again. There are no city water pipes in the building, and this local water pipe was the only connection found with the railway circuit. As above stated, the cellar columns showed no injury and no sign of a downward current, and there was no northward flow on the cellar girders, as would be the case if the railway current were doing the damage. The clue of the grounded lighting circuit was then followed.

In the ceiling of the hide cellar, a partial ground was found upon the local electric light circuit near the south wall, with a potential varying from 10 to 20 volts and a current direction to the south and east. Here a few

girder and held by bolts which clamp the rods together. There are distributed through the building about 3,600 of these sockets which reach the lower surface of the concrete and are tapped for $\frac{3}{4}$ -inch bolts so as to be available for supporting the water and steam pipes and the overhead tramways, etc., as shown in Fig. 2. About 600 of them are used to hold the steel conduits carrying the electric wires.

It was the use of these sockets for the latter purpose which led to most if not all of the injury to the building. A two-wire direct-current electric-lighting and power system is used at 120 volts pressure, with triple-braided rubber-covered wire of the best quality placed in japanned steel conduits. These conduits, of course, have openings at every switch, outlet and fixture, and through these openings the water of condensation from the steam and vapor in the building comes into contact with the insulated wire and with any bare portions where connections

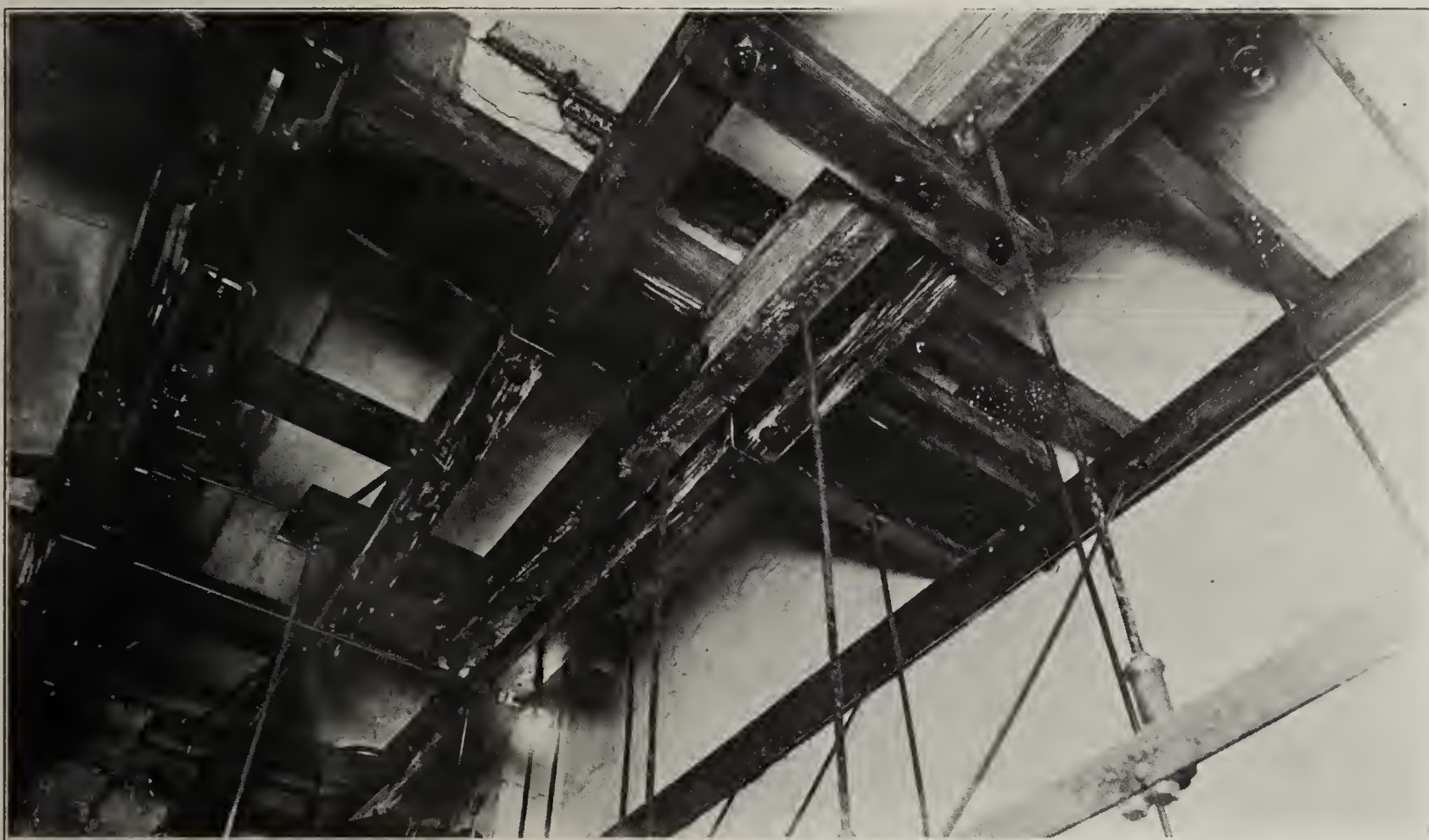


Fig. 1. View of Ceiling Showing Exposure of Rods in the Beam.

beams and girders were badly cracked. As shown in Fig. 4, some of the stirrups connected with the reinforcement had pushed off large scales of solid concrete. These stirrups were originally 1 inch wide and $\frac{1}{8}$ inch thick. The oxide over them, which was removed for analysis, was from 3-16 to $\frac{1}{4}$ inch thick, while the metal of the stirrups showed fully 1-16 inch of uncorroded steel. The thickening of the stirrup to the extent of an additional $1\frac{1}{8}$ -inch of rust, under the influence of the current evidently caused the cracks. This thickening has occurred only where the concrete is damp and where the steel has an electrical potential positive to the ground.

Fig. 5 shows the detail of the reinforcement of the beams and girders, made up of plain round bars, some continuing across the lower edge of the beams and others bending upward to reach the top of the beams at their ends. There are frequent U-shaped stirrups of $1\frac{1}{8}$ inch steel and ties of $\frac{1}{4}$ inch wire. Similar ties join the horizontal bars to the vertical rods of the columns. Two or more cast iron sockets are placed on each beam and

are made. There is more or less acid present all over the building, resulting from the rendering and other processes carried on, so that the condensed moisture is a very good conductor, compared with pure water, and so is the concrete where saturated with it.

The practical result in many of the rooms is that at various points individual positive and negative wires are immersed in a conducting fluid which is in contact with the metal of the conduit and therefore in contact with the metal reinforcement of the building, through the above mentioned sockets. If the condensed vapors immersed both positive and negative conductors where exposed, a more or less complete short circuit would have resulted, but probably this is not the usual circumstance.

Usually there resulted a local leakage from the electric circuit which may best be illustrated by picturing the moisture of condensation and the concrete as representing the electrolytic fluid in an electro-plating bath. The positive conductor of the lighting circuit would then represent the anode of the bath from which the current flows

and the negative conductor corresponds to the cathode to which the current goes. A metal plate introduced into the fluid of a plating bath midway between the two electrodes would show a negative potential of practically half the voltage when compared with the anode, and an equal positive potential when compared with the cathode. The metal plate may represent the conduit in this case and it is in metallic contact with the steel reinforcement of the concrete. If the plate is nearer the anode the electric pressure between it and the anode will diminish, while the pressure between it and the cathode will correspondingly increase. In this building, with the moist-



Fig. 6. Cracks In a Column Along Reinforcement.

ure in the conduit openings and in the concrete serving as a conducting fluid, the sum of the two potentials, positive wire to conduit and negative wire to conduit, always amounts to the potential between the positive and negative wires, less some 10 volts. This difference evidently represents the loss due to the chemical decomposition and to overcoming with resistance of the leakage path. The current passes from the positive copper wire at some outlet through the condensed vapor to the iron conduit and to the reinforcing steel for some little distance, finally passing from the steel of one member through the concrete to the steel of another member and thence along the conduit to some opening where the con-

densed vapor has grounded the negative wire.

The behavior of a liquid conductor has been well described in a recent article by Mr. Oliver P. Watts in the following paragraph:

"In a metallic wire, the resistance of which is known, the current may be calculated by the application of Ohm's law. This is not so for electrolytes when 'direct current' is used, except for a few combinations of special electrodes with a particular electrolyte. If a gradually increasing electro-motive force is applied to the ends of a wire and simultaneous readings of the current and pressure are made, the current increases in the same ratio as the E. M. F. When an electrolytic conductor with electrodes of platinum, carbon, or some other material insoluble in the particular electrolyte chosen, is substituted for the wire, it is found that for small values of pressure no permanent current flows. The E. M. F. must exceed a certain minimum value before a permanent current is obtained."

The author goes on to show that with a salt solution this minimum is about one volt and with a certain acid solution about $1\frac{1}{2}$ volts. Therefore to cause any damage in this case a greater pressure than 1 or $1\frac{1}{2}$ volts must be shown by a railway current entering the building on one conductor, passing through an electrolytic path to reach a second conductor.

Returning to the consideration of the local electrical circuits in the building, which has many fire walls of brick, it is evident that there can be a leakage from the positive wire to the reinforcement through the concrete to the reinforcement at another point and to the negative wire without operating the ground "detector" in the distant engine room. Indeed there might be a dangerous leakage through the "detector" unseen. This local leakage is small every morning when work is started and grows steadily larger during the day as more and more moisture condenses in the conduit openings. The concrete is cracked in various parts of the building wherever the concrete is damp and the steel reinforcement shows a positive potential of more than five volts to the ground. It is not cracked elsewhere even when frequently flooded with salt water.

A thorough examination of the building shows 32 girders with 503 lin. ft. of cracked concrete, 28 large beams with 562 ft. and 124 small beams with 1,991 ft. making a total of over 3,000 ft. Only 10% of this is in the cellar, while the remainder is in the ceilings of the 1st, 2nd and 3d stories and therefore could not possibly be caused by the railway return current of 0.8 amp., which as heretofore noted, has a maximum pressure of but $3\frac{3}{4}$ milli-volts on the $1\frac{1}{4}$ -in. pipe where it enters the building. Seven columns are cracked, but not one of these is in the cellar. Fig. 6 shows one of these columns measuring over all 18×18 ins. One of its rods is exposed by forcing off 4 ins. of solid concrete, and vertical cracks are shown parallel to each of the other rods. There are no cracks on the beams or girders above the level of the reinforcing steel, so the blame cannot be laid upon the materials nor the mixing, nor upon salt nor frost, as these would have affected the entire mass.

Samples of the cracked concrete, of the corroded steel and of the water, similar to that used in mixing the concrete were submitted to a prominent chemist for analysis. The concrete proved to be made of the best materials; it was well proportioned, well mixed by machine and had great strength. The amount of chlorine present in the concrete was but 0.38%. An analysis of the decomposed iron showed chlorine to the extent of only 0.02%, so the

failure cannot be laid to the use of salt. The water similar to that used in the concrete was found to contain 4.43 grains of chlorine per gallon with traces of sulphates, but not to an important degree. It is therefore evident that the concrete itself did not contain any material which caused the cracks.

A few days after the preliminary examination, the writer, in the presence of the owners and the electrician of the packing house met the engineer who had designed and supplied the concrete reinforcement of the building.



Fig. 3. Exposed Rods in Another Girder.

This gentleman stated his belief that the building had been ruined, that the publication of its condition would injure the financial standing of the owners and cause cancellation of the insurance, that he was certain that the railway current had caused the damage and that the railway company must either pay for it or stand a suit!

It was therefore necessary to make a demonstration of the electrical facts in the case, in the presence of these witnesses. One volt-meter was placed in circuit with a wire leading from a city hydrant some distance away

the railway current from the system. This was done and the needle of the first instrument fell to zero, while the needle of the second instrument did not waver from its former reading. The railway current was re-established and the local dynamos were then shut down. The needle of the second instrument connected with the steel reinforcement of the building returned to zero, while the first instrument was unaffected. This demonstration convinced the owners of the building that the railway current was not to blame.

Early in March of this year, a number of concrete blocks were made up measuring about $5 \times 4\frac{1}{8} \times 9\frac{1}{8}$ ins. Each block contained two 1-in. rods of the same kind of steel as had been used in the reinforcement of the building, placed in the center line $\frac{3}{4}$ in. apart. Two of these blocks were put in circuit about March 28 between the local water pipe above referred to where it entered the south wall of basement, and a damp cellar pillar near the north wall of the building, and thus were submitted to the action of the railway return current at the pressure previously reported. These blocks have not been cracked, although they are still in circuit. Other blocks were connected between the reinforcing rods and a wire leading to the negative bus bar of the railway power house. These were submitted to a pressure of three volts for many weeks but have not been impaired.

A similar block was placed in the engine room so that it received the same leakage pressure as was shown to exist on some of the reinforced steel of the building. This was connected on the afternoon of April 10. Two days later a crack was found around the rod which had the positive connection. By April 19 this crack had widened to $\frac{1}{8}$ in. from end to end of the block through about two inches of solid concrete. There were no cracks around the negative rod. This block has since been removed from the building by the engineer. Several other similar blocks were connected with the lighting circuit in series with one or more incandescent lamps so as to have a potential of from 25 to 38 volts. All of these soon showed cracks around the positive rods.

Another block was connected at the same time so that both rods had a negative charge and a heavy current at 110 volts was passed through it from an iron bar immersed in water. This was heated by the current to nearly boiling temperature but no cracks have developed though many weeks have passed.

These demonstrations led the owners of the building

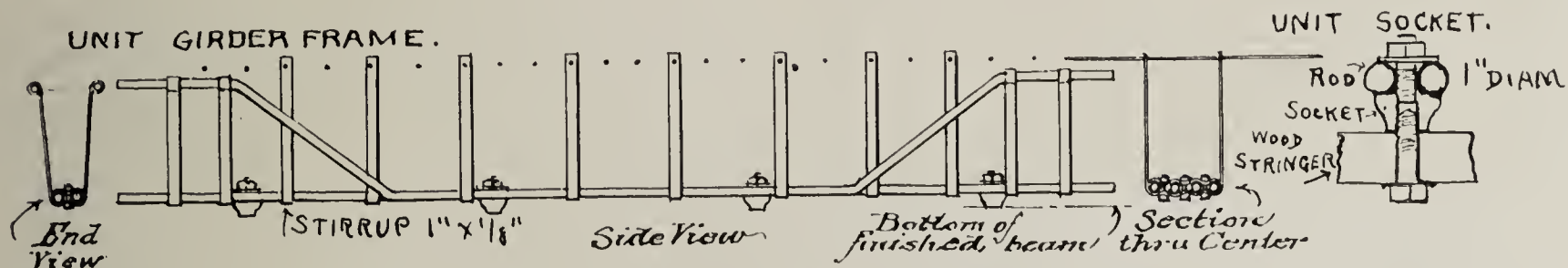


Fig. 5. Details of Beam Reinforcement.

and a wire leading to the negative cable connected to the track circuits of the electric railway. This voltmeter indicated the presence of the electric-railway potential with its characteristic variations. A second instrument was placed in circuit between the negative wires of the local electric plant and the steel reinforcement exposed at a crack in the beam shown on the left in Fig. 7. This instrument indicated a dangerous current on the reinforcing metal of the concrete. The superintendent of the railway power house was then requested to open all switches leading to the positive feeders, thus shutting off

to retain the writer to correct the electrical conditions of the reinforcing steel and to repair the damaged concrete. This report has been written with their full approval though their address is withheld until the restoration is completed.

It must be admitted that the designing engineer still holds the opinion that the railway current is to blame and that the building is injured beyond repair. In order to find whether the damage had yet reached a dangerous stage it was decided to consult a very prominent engineer with many years' experience in reinforced-concrete de-

signing and construction. The following is a portion of his report:

Effect of Damage on Strength of Structure.

"The beams and girders are reinforced by the old Hennebique method of plain round bars, some of them continuing straight along the lower edge of the beams and others being bent upward to reach the top of the beams at their ends. (See Fig. 5.) The web members are of light flat bar, apparently placed without reference to shear stresses. They are unattached to the main bars and are employed only as binders in the beam. They can, therefore, transmit only web stresses through their bond with the concrete and through the adhesion of the concrete to the main bars.

No anchorage is provided in the concrete at the ends of the main bars. No reverse reinforcement is provided such as would be the case if the main bars were long enough to extend into the next beam or separate bars were placed at the top of beams, tying the ends of adjacent beams together and forming a system of "continuous beam," in which the cantilever principle is combined.

The structure of the beams, as above mentioned, is wasteful in steel and contrary to the best engineering practice, but it has proved satisfactory in use. When we discover, as in the present case, that an important link in the chain—the adhesion of the concrete to the steel—is being destroyed, we find that this system of reinforcement is about as bad as it could be. We are forced to rely upon the remaining bond at the ends of the beams for the integrity of the structure.

Experiments have demonstrated that an adhesion of 250 lbs. per sq. in. of bar surface is conservative, thus: a $\frac{7}{8}$ -in. mild steel bar may be embedded in concrete to a depth of 2 ft., and will require a pull equal to its elastic limit to break its bond. The usual rule is based upon 24 diameters for smooth round bars in a 1:2:4 rock concrete mixture, 60 days old.

All of the reinforced-concrete beams and girders were examined and a number of them were found to be badly cracked on the under surface, most of the cracks being parallel with the reinforcing members at the lower edge of the beams. A few minute vertical and a few diagonal cracks were also found, but these are not at all unusual and do not necessarily indicate weakness.

The beams having the deep lengthwise cracks appear to be dangerously impaired for strength on account of the complete separation of the concrete from the steel or some distance each way from the middle of the beam and the consequent destruction of the bond between them. I found, however, that the ends of the beams were intact where they join the columns or walls, and that the concrete had apparently not separated from the bars at the ends of the beams, consequently the bars retained their anchorage in the ends of the concrete beams.

To demonstrate that this was the case, the beams over the railway track and loading platform, which were the worst beams in the building in appearance (shown in Fig. 7), were selected for a deflection test. They varied from 19 to 23 ft. in span. Those selected were the second and fourth from the west wall and were about 20 to 21 ft. span. The beams were 12 ins. in width by $18\frac{1}{2}$ ins. deep below slab, 5 ft. 3 ins. c. to c. The load was removed from both these beams before testing. Deflection testing apparatus was applied to them and adjusted; then the floor was loaded with large pails of lard piled five high from the west wall to the sixth beam, excepting along north wall where they were three high, making about 250 lbs. to the

sq. ft., with a deflection in the middle of the second beam from the west wall of 0.055 in. The fourth beam from the west wall showed a deflection of 0.05 in. This deflection was regular, it increased regularly as the load was applied and showed conclusively that the beams are not yet seriously weakened in their load carrying capacity. However, if the present electrical conditions are allowed to continue, the bond between the bars at the ends of the beams will be destroyed both on the horizontal bottom members and on the bars which extend diagonally upward to the top of the beams at their ends. When this bond is impaired the beam will no longer sustain its load and the destruction of the building will be inevitable."

Conclusions.

When the work is completed the writer will be glad to report the details of the necessary correction of the electrical troubles and to describe the methods of restoring the injured concrete. These have already proved to be effective as far as applied. Meanwhile the following suggestions are offered in regard to electrical circuits in damp reinforced concrete buildings.

Do not depend for insulation upon even the best rubber covered wire nor upon japanned conduits in rooms subjected to fumes and vapors.

Do not permit the grounding of the intermediate wire in the three-wire systems.

On a two-wire system do not place the ground detector in circuit except when actually testing.

Do not permit any grounding of the secondary circuit of a transformer.

Bind together electrically all the reinforcing steel of each bent, and bring from it a suitable wire leading to the surface of the concrete to use for testing and other purposes if necessary.

In the vicinity of electric power houses or sub-stations use wooden pipe for gas or water service pipes from the street mains. Use insulating tubes around the gas, water or steam pipes where they pass through concrete floors or walls.

Make frequent tests for stray currents between reinforcing steel and ground, using low-reading instruments. Never permit any pipe or reinforcing rod to show a potential positive to the earth or to the nearest negative conductor.

It cannot be denied that this is a complicated problem, requiring careful study of many important factors which may vary in different localities.

EXTENSIVE IMPROVEMENTS.

The Excelsior Brick Co., of Fredonia, Kan., is making extensive improvements to its plant, including new machinery from the shops of the Bonnot Co., Canton, O. The company expects to be in shape to make high-class repress brick within sixty days.

One of the largest departments of the Clymer (Pa.) Brick and Fire Clay Co. is the manufacture of perforated radial brick for the construction of brick chimneys. The brick from the Clymer plant is being used in the construction of a new radial brick chimney for the Eastman Kodak Co., at Rochester, N. Y., which, when completed, will be 366 feet 8 inches in height.

The Jeffries Fireproofing Co., at Wheeling, W. Va., contemplates building an addition to its plant in the fall.

The United States Porcelain Co., operating plants at New Cumberland, W. Va., and Findlay, O., is preparing plans for the erection of a third plant.

GIANT BRICK CONSOLIDATION

Majority of Common Brick Manufacturers in Hudson River District Unite in One Corporation The Greater New York Brick Co.

By Allen E. Beals

What appears to be the most important consolidation of brick manufacturing interests in the history of the industry has been effected in New York City, according to an apparently authentic report. The manufacturers mentioned as connected with the enterprise represent practically all of the leading brick interests of the Hudson, from Albany to New York. The combined value of the yards which are said to be included in the consolidation would be upwards of \$25,000,000, and the total output of these yards is over one billion brick annually.

The formation of the Greater New York Brick Company, by a majority of the common brick manufacturers of the Hudson river district in the last fortnight, marks a complete change in Eastern brick selling conditions, if not a universal change in manufacturing costs. It signalizes the end of the "every-man-for-himself" pol-

To thoroughly grasp the true meaning of the new idea, it is necessary, first, to step back into history to find the necessity for such a radical change from a selling plan that has endured almost since the Hudson river clay industry was in its infancy, and which, in fact, has heretofore seemed to be the only practical way of marketing the products from the rich clay banks that lay at New York's back door.

Most of the Hudson river common brick, and there is very little of any other type of brick manufactured in that district, is sent to the New York market consigned to agents or commission men. These men have been allowed from a shilling to a quarter of a dollar on every thousand of brick they sold to dealers. A few of these agents represented their own yards—that is, a manufacturer frequently had his own selling force in New York.



Typical Hudson River Yard. One of the Many Mammoth Plants Which Dot the Picturesque Shores of this Famous River.

icy which has characterized that section of the country for years, and marks the beginning of a prosperity in the industry often dreamed of, but never realized. In short, it means that every manufacturer of common brick will be guaranteed a profit, if there is a profit to be had, not by increasing the price of the commodity in the New York or Metropolitan district market, but by cutting down the cost of manufacture, even before the clay is taken from the banks.

On July 1 the company started in business and on that date the old system of selling brick by agents on commission expired. Picturesque West Fifty-second street, the Mecca for brick shipments from the 119 plants between New York and Mechanicsville for half a century, gave way to the inroads of automobile manufacturers and piano-making industries, and, one by one, the little old offices, with their rural characteristics, will permanently pull down their blinds, if the plans of the new company are consummated.

In no sense will this be effected by a system of crowding the outsiders inside, according to an official of the new company, but "by making the new company and its methods so appealing to those not now numbered in its membership that they will seek enrollment."

Sometimes these agents also controlled the sales of other makes of brick. The John B. Rose Co., for example, not only sold the famous Rose brick, but the outputs of other yards in the district, as well as some of the Hackensack river, N. J., district manufacturer's products.

In theory, the manufacturer would make his shipments upon instructions from the agents in New York who knew, by trade paper reports and construction intelligence, exactly what the conditions were and were thus able to gage the demand. But sometimes a manufacturer would send in shipments, wholly contrary to the agent's advice, with instructions to hold the brick for a certain price. Sometimes this would be a shilling or even more above the current quotation at dock and the cargoes would lie, frequently for weeks, at the wharf, piling up dock charges and demurrage. For years this has been one of the most conspicuous leaks.

Another condition responsible for losses was the distribution facilities afforded by the city. All the docks in New York are owned by the city, but are leased to various companies, with the exception of those assigned to special uses. The brick, sand, crushed stone, gravel and grit interests have had docks at West 182nd street, at West Fifty-second street, at West Forty-fourth street

and at Pier 6, East river. Practically all the brick that came down the Hudson river in flotillas of one, two, four, six and eight barges have tied up at either the West 182nd street dock or at the wharf at West Fifty-second street, where the wholesale brick market was located. It is apparent that under this system barges had to be hauled twice, that is, from the yards to the wholesale market, and, upon being sold, to the point of distribution to dealers. A loss was almost sure to be felt here. When brick was sold on contract, this extra haulage, which was based on the cost of towage from yard to New York, or a dollar a thousand, within lighterage limits, this additional burden was eliminated because the brick were shipped direct from the yard to the point of distribution to dealers.

But the cost of supplies has, in recent years, become a serious one to manufacturers. This has naturally resulted in increased cost of manufacture, and with the New York market in such a condition as it has been within the last year or more, there was absolutely no way in which the producer could get this outlay back because at no time this year, and seldom last year, has the wholesale price of common brick in New York reached \$6.25 a thousand, at which level the producer begins to take a profit. Coal costs more, labor costs more and for two years building construction, until recently, has been re-



Sen. Jno. B. Rose.

tarded. But these are comparatively insignificant, when it is stated that most of the sand and tempering material, such as quartz and gravel, have to be purchased now, owing to the fact that most of the over-laden on the yards has been worked out.

Far-seeing manufacturers have recognized these conditions for years. Attempts have been made to regulate the output; to cure the ailment at the producing end. They organized brick manufacturers' associations and district clubs for the purpose of controlling the output so that it would conform to the actual selling conditions at market. The fact that some of the manufacturers were also agents was, so to speak, a thorn in the side of members, who alleged that this gave some manufacturers an advantage. The additional fact that some of these manufacturers were also members and helped compose the board of directors and executive committee of the New York Building Material Dealers' Association, which is said to fix prices at which brick shall be bought; all contributed to mar the effectiveness of the association and it finally passed out of existence.

The difficulty in forming an organization which would positively remedy these conditions has been the Sherman

Anti-Trust Law. There has seemed to be no way in which the prices in New York could be controlled and the bear influences have had full reign. Furthermore, nothing could be even attempted in this line until the big cases in the Supreme Court were decided. No one could, of course, anticipate what the attitude of the court would be on these momentous questions.

One way that seemed feasible was to effect the proposed organization on the same basis as that which was adopted in the formation of the Chicago Brick Co., but, according to Senator Rose, the president of the "Greater New York Brick Co.," this was not attempted in organizing the Eastern combine.

For practically four months certain leading manufacturers, chief among whom were Robert Main, of Saugerties; George W. Washburn, of Saugerties, and H. J. Jova, of Roseton, have been conferring on plans for getting the various manufacturers together to discuss proposed plans and to organize, if possible. The receipt of the recent Supreme Court decisions helped to pave the way for the new company, and on Monday, June 19, at the Palatine Hotel in Newburg, the very heart of the Hudson river brick district, seventy-five manufacturers formed an organization which is to be known as the Greater New York Brick Co.

This meeting adopted a set of by-laws and selected this board of managers: John B. Rose, Roseton; Robert Main, Saugerties; Everett Fowler, Haverstraw; A. S. Stables, Kingston; Frank DeNoyelles, Haverstraw; George S. Allison, Stoney Point; Lucien H. Washburn, Stoney Point; C. F. Suderley, Coeymans; D. Fowler, Jr., Haverstraw; Henry R. Brigham, Kingston; John F. Shankey, Haverstraw; David Terry, Kingston; Fred P. Luther, Kingston; C. L. Bleakey, Verplank; H. J. Jova, Roseton; Percival Golden, Catskill; Edwin Brockway, Brockway; W. A. Nicholson, Dutchess Junction; John E. Lynch, Haverstraw; Hiram Merritt, Newburg; A. E. Aldridge, Fishkill; George Hutton, Kingston; M. M. Haven, Newburg; Alonzo Rose, Kingston; William Malley, Haverstraw, and W. W. Rider, Athens.

Senator John B. Rose was elected temporary president and Hiram Merritt temporary secretary, and the meeting adjourned for permanent organization on the following Friday at the company's main office, at 103 Park avenue, New York.

On Friday afternoon twenty-nine brick manufacturers, composing the board of managers, elected Senator Rose, president; Aaron E. Aldridge, vice-president; Frank DeNoyelles, secretary, and Robert Main, treasurer. The board of directors chosen consists of the officers and Lucien H. Washburn, of Haverstraw; Everett Fowler, of Haverstraw; H. J. Jova, of Roseton; Henry R. Brigham, of Kingston; Alonzo Rose, of Kingston; George W. Washburn, of Saugerties, and C. F. Suderly, of Coeymans.

The scope of the new organization is best outlined by Senator Rose's statement to me immediately following the meeting, in which he said:

"This is in no sense a brick trust. Our capital is not sufficiently large to warrant such a designation, in the first place. It will not control prices, nor will it regulate shipments, in the second place. Its primary purpose will be to make common brick manufacture in the Hudson river district profitable by reducing the cost of supplies to manufacturers and to cut down distribution costs in this city.

"The company will provide manufacturers with better facilities for selling their brick, by giving them a selling organization. The agents who now sell brick for manu-

facturers will be offered positions if they care to accept them, and the commission house of John B. Rose, with others, will pass out of existence.

"The new company will purchase all the manufacturers' supplies in bulk. For instance, we will purchase thousands of tons of coal in a lump tonnage and distribute it to various yards. Here a big saving will be effected at once, and so on down the line.

"We will begin business on July 1 and we hope in time to bring all the existing companies in the district into the organization."

Hiram Merritt, the temporary secretary, earlier in the week explained the purposes of the association in this way:

"The general impression seems to be that this is some kind of a trust, a brick trust to make the builders pay extortionate rates for the brick they use. This is not the purpose of our company. Although in our articles of incorporation it states that we may manufacture, buy and sell, the real object of the company will be to sell the products of the Hudson river yards.

"The word 'manufacture' in the incorporation papers is put there in case we might want to do this at some future time. We are capitalized for only \$100,000, which alone indicates that we do not plan to absorb any of the existing manufacturing companies. In simply selling the brick a large capitalization will not be required. This company will take the money received from the sale of brick in New York and hand it over to the many individual brick companies working under the name of the Greater New York Brick Co.

"In the incorporation papers it also states that the company is to buy and sell coal and other materials. The object of this clause is to permit the company to buy the products that are necessary to brick manufacture for all the companies and sell it to the companies that are associated. Buying on the larger scale will greatly reduce the cost of materials and supplies."

In brief, the Greater New York Brick Co. proposes to give the brick manufacturers a business-like selling center, and it has every opportunity of showing what it can do under existing circumstances.

The fact that neither the Sayre & Fisher Co., representing the central New Jersey clay products industry nor the Connecticut companies are listed in the membership at present, and the additional fact that some of the largest independent plants in the Hudson river district, such as the William K. Hammond yards, have not yet entered the organization, will act as a brake upon any possible attempt being made to inflate present market prices above a conservative level.

Connecticut brick can enter the New York market when prices reach \$6.50 and more a thousand, so that, if the new combination seeks to advance prices, foreign brick will pour into the market in competition with the Hudson river brick manufacturers.

That the new company is entirely within the law is apparent from the reply of one company official when I asked him whether the organizers based their by-laws upon an interpretation of the Standard Oil and Tobacco case decisions, especially in reference to defining the lengths to which so-called "big business" may in the future go. He said:

"It is safe to assume that we took into careful consideration the legal phase of the matter."

The new company will represent 90 per cent of the 119 yards in the Hudson river district, turning out annually between 1,400,000 and 1,800,000 brick, not including the

Hackensack, N. J., district. In 1909 the total value of this product was \$6,443,190 on a total output of 1,218,784,000 brick. The new company therefore controls an annual output of 1,096,905,600 brick. At the current market price of \$5.78½ a thousand (June 24), this represents a total valuation of \$6,345,598, but the price is expected to move up to about \$6.12½ a thousand as soon as the new organization begins business. At the average price obtained for brick so far this year, or \$5.50 a thousand, the value of this output would have totaled \$6,032,980.

It will be seen, therefore, that the Hudson river brick manufacturers have, in reality, merely guaranteed themselves a profit on their business, not by making the consumer pay the fiddler, but by scientifically reducing the cost of their supplies. In this way it has radically departed from notorious trust practices and has ensconced itself safely within the shadow of the ominous Sherman Anti-Trust Law.

NATIONAL BUILDING MATERIAL EXHIBITION.

The recent great loss of property and life through fire disasters has brought prominently before the trade and public the fact that the National Building Material Exhibition which is to take place at Madison Square Garden, New York City, September 9th to 16th, inclusive, is to be held at a time when such a show has become a real necessity from an educational standpoint. The inadequate fire proofing of our so-called "fireproof" buildings, both private and public, has brought home to the American public the absolute necessity for a complete revolution in the field of building construction. The work that Ex-Chief Edward F. Croker, who has long been recognized as America's greatest fire chief, has taken up for the prevention and protection of property and lives from disastrous fires has aroused and brought about the commendation of the public and press of the entire country. An interesting feature of the show will be an exhibition by Mr. Croker, demonstrating methods of fire prevention.

The project of the Building Material Exhibition will be primarily to afford architects, manufacturers of building materials, both interior and exterior, and building appliances an opportunity to get into closer touch not only with each other but with the public at large.

Expressions of approval and hearty co-operation have followed the announcement of the enterprise from all quarters. Such noted architects as McKim-Mead & White, James E. Ware & Son, Herbert S. Harde and R. Thomas Short and James & Leo have already publicly voiced their appreciation of the fact that the exhibition is now an assured thing. Benjamin D. Traitel, president of the Building Trades Employers' Association of New York City, writes in a letter of endorsement, "We strongly favor a full, comprehensive exhibition of materials and appliances required in the make-up of modern buildings. Such an exhibition, especially a permanent one, is valuable alike to architects, builders and building investors." The Mechanics and Traders Exchange has also placed the stamp of approval upon the project. The scope of the coming show, as its name implies, will cover a large field, including everything of interest to the architect, the general builder, the manufacturer and the consumer of interior and exterior appurtenances of every description and to the laymen householder.

The Executive Offices of the promoters are located in the Flatiron Building, Suite 508-9, New York City, and the general management of the show is under the direction of Mr. P. T. Powers.

THRIVING IOWA INDUSTRY

Des Moines, Iowa, has a thriving brick industry in the Des Moines Clay Manufacturing Co.'s large plant, which is located on West Seventh St., near the south end of the viaduct. The company also has a display room and sales office at 213 Ninth St.

This company manufactures building block and high grade facing ware, known throughout the western section of the country as "Terra Cotta Brick."

This high grade "terra cotta" brick and block is be-

safe place for the employees. The clay is shipped to Des Moines, where the factory is located.

That the company made a "find" when it discovered this clay deposit is evidenced by the product of the plant. The clay is said to be identical with the celebrated deposit of the Hydraulic Brick Co., of Brazil, Ind., which furnished the brick for many of the famous buildings of the country.

The factory is equipped with an Atlas engine, Eagle



A Portion of the Plant of the Des Moines (Ia.) Clay Mfg. Co. Office Building in the Background.

coming widely and favorably known and has been used in building numerous buildings in Missouri, Minnesota, Kansas, Oklahoma and South Dakota. "Buff" and "salt glazed," "tapestry" and "matt" brick are also successfully made by this company. The new East Des Moines depot is an example of high grade tile construction, being fire-proof, impervious and is nicely cleaned by every rain. The tile are the product of this company.

The Des Moines company has one of the finest fire clay

dry pans, Wallace Manufacturing Co.'s Big Wonder brick machine, and a Bensing cutting-table made especially for the uses of this company. The plant is electric lighted, has a twelve-tunnel waste-heat dryer, nine kilns, and altogether is a typical modern, up-to-date plant. The present capacity is 25,000 brick per day, or about 7,000,000 per annum, or its equivalent in block. The company is planning to increase this capacity in the fall, and already has begun work on a Haigh continuous kiln.



Electric Lights Make Mining a Pleasure at the Mine of the Des Moines Clay Mfg. Co.



Interior of Clay Mine, of Des Moines Clay Mfg. Co., at Morgan Valley, Ia.

deposits in the Middle West, located at Morgan Valley, twenty miles from Des Moines. The clay is 35 ft. deep, overlaid with 70 ft. of shale, and is mined in much the same way as coal, the mine being equipped with electric lights, electric drills, and every convenience which tends to expedite the work and make the mine a pleasant and

The officers of the company are: F. C. Hubbell, president; George H. Emery, vice-president; I. M. Earle, secretary, and C. W. Emery, manager. Both Mr. George H. Emery and C. W. Emery are well known in the clay industry throughout the country, and the success of the company is largely due to their untiring efforts.

RESIDENCE OF MR. BRICKHOUSE

Mr. E. J. Brickhouse of Norfolk, Va., has the distinction of being, with little doubt, the only man in the United States bearing the unusual surname of Brickhouse, and it is eminently fitting that he should occupy a brick home.

The Brickhouse home shown herewith is typical of the hospitable Southern mansion and is in remarkably good repair, considering that it was built twenty-three years ago. The brick used in its construction were Balti-

Just why English brick should be so much more important than brick made in the colonies is not clear to the average person, but antiquarian writers seem to lay as much stress on the place of manufacture of the brick of an old house as the average reporter does on the caliber of a pistol with which a crime was committed.

"The principal thing that is wrong about the 'manor house built with brick that came from England' is that, in



Handsome Residence of Mr. E. J. Brickhouse, Norfolk, Va.

more red pressed brick and common brick, made of clay dug on the site where the home stands. A small kiln was built on the rear of the lot and there the brick were made by hand and burned, with no worry over strikes and delay in hauling material, to annoy the builder.

The architecture of the building shows that home building was something of an art, a quarter of a century ago, in Norfolk. The interior of the home, as suggested by the exterior, is of more than usual comfort, the rooms being spacious, with the high ceilings prevalent at that time. The woodwork is all of solid oak and a general air of home-like comfort and hospitality seems to pervade the atmosphere of this charming Southern manor house.

In this connection the following from an eastern paper is of interest:

"Nearly every stranger with a taste for writing who invades the Potomac valley south of Washington returns to tell of churches and 'manor houses' built of brick that came from England. There is something in this English brick story that makes a strong appeal to strangers.

most instances, it is not true. On numerous voyages of the small ships that came up the Potomac for cargoes of tobacco they brought some brick as ballast. They did not bring a full cargo of brick, but just enough to make the craft sit so low in the water that she might be sailed close to the wind and not be in imminent danger of capsizing. It is a matter of record that some houses were built of these brick. It was not because they were better than homemade brick, for, in fact, inferior brick were of course brought as ballast, but because at some river landing it was cheaper to buy these brick than to make them.

"The vast majority of the comfortable country houses of Maryland and Virginia in colonial times were of wood. But when a man concluded to build a brick house he looked for clay on his own land, or perhaps a neighbor's, and the brick were made and burned there, and as close as possible to the site of the proposed house. Nearly all the colonial country brick houses of the Potomac region were built in this way.



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EDITORIAL COMMENT.

In police verbiage the engineers appear now to have "the goods" on the reinforced-concrete-building fellows. For some years it has been an established fact that the disintegration and destruction of iron and steel construction is accomplished through electrolysis, resulting from the leakage of electric current from transmission lines. The effect of this electrolysis has been particularly severe upon elevated railroad structures.

When you stop to think of it, it appears perfectly reasonable that a building containing a large amount of iron and steel, unprotected by insulated covering, would be subject to the same dangerous conditions as those which cause electrolysis of elevated railroad structures; but it has remained for Mr. Harold P. Brown, a prominent New York engineer, to actually put the matter to a test and to prove the danger of reinforced concrete from this source. The startling exposure made by Mr. Brown, an account of which appears in this issue, should put an effectual stop to the present craze for experimentation in reinforced concrete construction. The prospective builder should hesitate a long while before adopting a form of construction so dangerous, and the present owners of such buildings must view with alarm the possibilities of disintegration and destruction of their properties in case wandering electric currents should reach the iron and steel imbedded in concrete.

Of course, as is usual when concrete construction is considered, excuses are offered and suggestions made, whereby the difficulty can be overcome, but the cure offered for this evil is so elaborate and impractical that we doubt if any builder would undertake to adopt it. Mr. Brown may as well say that it is possible to safely use

reinforced concrete in the construction of a building if all the reinforcement in that building is properly protected by good burned clay brick or fireproofing, and if the walls are properly reinforced and faced with the same material, and properly constructed arches of fireproofing are placed under the concrete beams and floors.

OUR FLAG ABROAD.

Hon. Wm. C. Redfield, vice president of the American Blower Co., Detroit, Mich., recently started on an extensive tour of the world, but was obliged to cut his journey short in order to be back in time to attend the extra session of Congress. Mr. Redfield started out to make a careful investigation of the export situation and the facilities for the execution of the U. S. trade in foreign countries and his letters home on this subject have been of great interest.

In a letter written by Mr. Redfield, from Bombay, India, March 31st, he dwells particularly upon the practically total disappearance of the American flag in foreign ports. He stated that he had not seen an American flag since leaving Japan. While this matter would, of course, touch the pride of any American citizen, yet Mr. Redfield casts all sentiment aside and draws upon the loss which this country is suffering annually because of our lack of prestige in foreign countries. He believes that the failure of the U. S. to show its colors, on vessels of lading, results in a large loss of business which we might secure if we could gain greater confidence among foreigners, in regard to our shipping facilities.

This, however, is only a small point in Mr. Redfield's arguments, the main issue being the advantages which the foreign countries have by controlling all of the shipping, enabling them to discriminate against the U. S. export trade to such an extent as to seriously handicap our selling efforts abroad.

PROBLEMS OF HIS OWN.

"De mos' wonderful invention of de age," said Mr. Colliflower, "is de flyin' machine."

"Look yere," answered Mr. Erastus Pinkley. "don' come 'roun' jollifyin' me 'bout no high altitudinous transportations. I's got worry enough gettin' dis yere wheelbarrow ober to dat kiln and back ag'in to dis 'ere brick pile."—Exchange.

You Know—

CLAY MACHINERY COSTS MONEY.

We Know—

THAT YOU CAN GET GOOD MONEY—

for the Machines, you have laid aside to make room for newer and better ones. Some other clay manufacturer wants those very machines, and would gladly pay a Fair Price for them, but he doesn't know that you have them.

We will put you in touch with him, through the medium of our Classified Ad Department, for the small outlay of \$2.00 per inch for space used. It is fascinating to see how Small a Space one can use to Express a Variety of Wants. Try your Hand at it and send your Ad in time for our next issue. "Brick and Clay Record" has been remarkably successful in securing results for the users of this department in the matter of selling Lands and Machinery, and in Securing Help and Positions.



Attractive Exhibit of Natco Tile, Made by the National Fire Proofing Co., Shown at the Recent Land Show at Madison Square Garden, New York.

TIME BY THE FORE-LOCK.

Throughout the country, manufacturers of various forms of clay products are already beginning to plan the character of their exhibits for the great clay show to be held in Chicago, at the Coliseum, next March.

An exposition of this kind is somewhat different from the ordinary cheaply prepared shows of other industries. Exhibits to be worth while cannot be planned or prepared at the last moment. To make an exhibit of clay products worth while and effective as an advertising display the artistic design of the exhibit must be laid out most carefully and the material from which the exhibit is to be erected prepared long beforehand, and carefully selected.

There is every indication that there will be more demand for exhibit space at the clay show than the Coliseum will afford and those who intend to take advantage of this opportunity should not delay in communicating with the manager, F. L. Hopley, 816 Chamber of Commerce Bldg., Chicago, asking him for floor plans and particulars.

Some of the displays already being planned insure the artistic success of the exposition. It is certain that the beauties and advantages of burned clay will be more fully exploited through this exposition than ever before and the displays will be of such an unusual and attractive character that they will be made the subject for future stories in the leading illustrated papers of the country, thus giving burned clay an immense amount of free advertising.

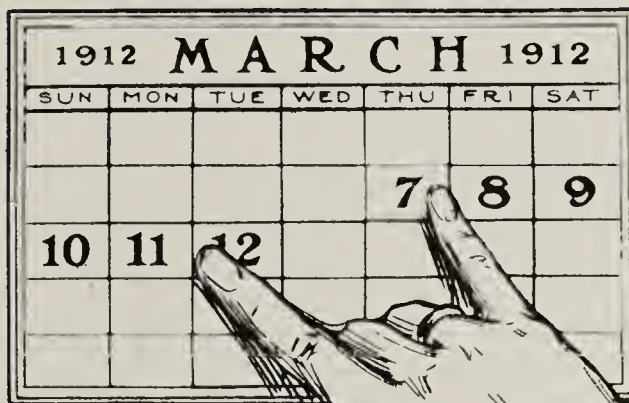
Active advertising of the show has already commenced and it should be the pleasure and duty of every clay products manufacturer to co-operate in this advertising. This is YOUR show, gentlemen, and therefore should have your best efforts. One thing that you can do is to call attention to the date of the show on every piece of mail that goes out of your office. Mr. Hopley, manager, will be glad to supply you with a rubber stamp showing a date plate like the accompanying illustration, or he will give you an electrotype of the same thing, which you can have printed in the corner of your stationery.

AT THE LAND SHOW.

Beauty that is to be obtained in home building by the use of hollow tile, such as that made by the National Fireproofing Co., of Pittsburgh, have been brought out by the company in the erection of fireproofing cottages at the recent land show in Madison Square Garden, New York.

The cottage shown in the picture was erected in 48 hours, which is a most remarkable construction record. It was built on plans that can be followed in the erection

CLAY PRODUCTS SHOW COLISEUM, CHICAGO



**THIS IS YOUR SHOW
HAVE AN EXHIBIT
BE SURE TO ATTEND
GET OTHERS TO GO**

of any home, and with the same material. Even the porch columns are built of fire-resisting materials.

It will be noticed that one of the walls of the cottage was left open, in order to show thousands of visitors to the land show just how fireproofing homes can and should be built.

The cottage was one of the big events of the land show and was the center of home building attractions.

AN ARMFUL OF BOUQUETS

While an editor's life is proverbially quite the opposite of a "bed of roses," occasionally there comes to our desk some tokens of appreciation which indicate that all our efforts have not been in vain and that some of the seed sown has fallen on fertile soil and taken root.

The following are a few letters of commendation taken at random from many such which we have received:

The Hill Brick and Tile Co., of Colorado Springs, Colo., writes us as follows: "You are certainly to be congratulated on the very excellent get-up of your journal. The illustrations are not surpassed by any publication in the country. We trust your enterprise will be abundantly rewarded."

The Star Pottery Works at Elmendorf, Texas, writes as follows: "We are always glad to see 'Brick & Clay Record' arrive and find much in each of its publications that is interesting as well as instructive."

In a recent communication **Mr. George W. Camp, Manufacturer of Pressed Brick and Drain Tile at Texas City, Illinois,** sends a check for two years' subscription and says: "I would not think of doing without 'Brick & Clay Record.'"

John C. Boss, president of John C. Boss Co., Elkhart, Ind., writes us: "You are to be congratulated on the splendid success of your journal and your 'special issues' are undoubtedly beyond the usual mark of perfection in business enterprise and value to the brickmaking fraternity. We look forward to them with interest and wish you continued success."

H. M. Clemens, secretary of the Cannelton, Ind., Sewer Pipe Co., says: "You are certainly issuing a good paper, and it is always a welcome visitor at our office. We wish you continued success."

Many friends in Canada appreciate our efforts in behalf of the clay industry, as the following from **Mr. C. A. Hart, proprietor of the Belleville (Ont.) Pottery Co.,** indicates:

"We have received sample copies of your publication and consider it one of the best in the field, especially for those manufacturing brick, and without doubt it will give many valuable pointers to any interested in clay manufacture. We enclose \$2.00 for subscription and wish you success."

Mr. R. H. Greer writes from Tuxpam, Vera Gruz, Mexico, stating: "You certainly have a fine paper, well worthy of hearty support."

C. S. Bowser of Richardton, N. D. writes: "A man who would kick on paying \$1.00 for 24 issues of 'Brick & Clay Record' would not be a good Democrat."

In a recent letter, **Mr. Nicholas Zimmerman of Cannelton, Ind.,** stated: "I like 'Brick & Clay Record' very much and would not be without it in my home."

That **Mr. I. G. Wheeler of the Wheeler Building Material & Fuel Co. at Carthage, Mo.,** likes to read the news is evidenced by the following: "As you will observe from our letter-head, I am not in the brick manufacturing business now, but still I like to see and know what is going on all over this country and I find I can get it if I read 'Brick & Clay Record.'"

Mr. James Laurie, manufacturer of Building Brick at Scranton, Pa., writes: "Your journal is a good one and more worth \$2.00 than some others."

Harry S. Sleicher, secretary-treasurer-manager, of the Gleasonston (Pa.) Fire Brick Co., says: "We read your publication with continued interest."

Mr. Geo. S. Pettengill, a Brick Manufacturer at Lewiston, Maine, expresses his appreciation of the clay working

fraternity, as follows: "From time to time I have been reading the speeches made, at the various clay conventions. They are certainly able, and contain the most good, sound common sense of anything that I have read for years. I feel proud that we have such able men in our ranks. I am well pleased with 'Brick & Clay Record.'"

The National Roofing Co., of Pittsburg, Pa., writes us as follows: "We find many interesting items in your trade journal, giving information regarding new building operations, which of course, we follow up for requirements in our line, which often leads to our securing business. We are pleased to note the great improvement in your journal since the consolidation of 'Brick and Clay Record'."

Mr. C. E. Fuller, of the Newberg Brick & Tile Co., of Portland, Oregon, enjoys 'Brick & Clay Record' and states " 'Brick & Clay Record' is certainly a fine publication and eagerly read by all members of our company. We wish you all the success possible."

The following is an excerpt from a letter from the **Pacific Builder and Engineer, of Seattle, Wash:** "We believe that the clay workers in this territory are trying hard to get together on several important problems, not the least of which is the publicity intended to create a demand for their products. The consolidation of the Clay Record with your publication is evidently proving beneficial to the publishers, advertisers and subscribers. We wish you merited success."

P. B. Broughton, general manager of the Fairmont (Minn.) Drain Tile & Brick Co., says: "I can not get along without having your valuable information on clay production always at hand."

Jas. Thornton, of The Thornton Brothers Brick Co. of Rudyard, Mich., writes the following: "We would not do without 'Brick & Clay Record' for twice the price. We think it is one of the best papers in the country to keep the trade posted on the brick and building outlook."

Peter Stipp, Successor to The Scranton (Pa.) Vitrified Brick Co., states: "I find your publication of great assistance to brick makers, as it contains many valuable articles."

Jos. F. Gantner, of the Fayette (Mo.) Brick & Tile Works., writes: "'Brick & Clay Record' is too interesting for us to discontinue it and we do not want to miss a single number of it."

E. M. Forrest & Son, Manufacturers of Building Brick and Drain Tile at Rutland, Ohio, renewed their subscription to "Brick & Clay Record" with the brief comment: "We can't afford to do without it."

CEMENT OUTPUT FOR 1910.

The government statistics show an increase of 16 per cent over 1909 in the production of Portland cement in the U. S. last year. The total production was 75,699,485 barrels as compared with 64,991,431 barrels in 1909.

The value of the 1910 product was \$67,506,479, showing an average value of 89.2 cents per barrel. This represents the value of the cement in bulk at the mill.

The largest production of cement appears to have been in the East, the cement plants in Pennsylvania, New York, New Jersey and Massachusetts having produced over 33,000,000 barrels in 1910. Pennsylvania is the largest producer of cement, having turned out almost 27,000,000 barrels in 1910.

There are 110 plants manufacturing cement in this country which are recorded in active operation.



RIGHTS UNDER YEARLY CONTRACT.

In an action brought by a brick company against a company engaged in the sale of builder's supplies, including brick, to recover damages for an alleged breach of contract, it appeared that they had entered into a contract whereby the plaintiff had granted to the defendant the sole and exclusive right to purchase and market its entire output of first quality, wire cut and repress building brick for and during the term of one year, the defendant agreeing to purchase not less than 5,000,000 brick per year, during the continuance of the agreement, as rapidly as the same could be produced, with reasonable diligence, the plaintiff agreeing to manufacture and to load same on cars when ordered by the defendant, provided that whenever the plaintiff had in stock more than 1,500,000 brick for which no orders had been received from the defendant, the plaintiff should have the option of selling said excess brick to other persons on its own account, without reference to the terms and conditions of this contract, so as to keep its plant in continuous operation, provided that before the selling it should notify the defendant. All brick thus sold by the plaintiff were to be deducted from the 5,000,000 brick agreed to be manufactured by it, it being mutually agreed that such sales should not discharge any obligations of either party to the contract, except as to the sales so actually made by the plaintiff.

The total amount of brick which the defendant received under the contract and for which it paid was 2,822,922 brick. The remainder, or 2,117,078, were not manufactured. The plaintiff alleged that it had not manufactured these brick by reason of the acts of the defendant in violation of the contract, and it sought in this action to recover the profit which it was alleged it would have made, if the defendant had observed the obligations which the contract imposed upon it. The defendant denied that it was under any obligation to order and give shipping directions for the brick which the plaintiff had not manufactured.

The plaintiff recovered a judgment, which is affirmed by the Supreme Court of Pennsylvania, in *C. P. Mayer Brick Co. vs. D. J. Kennedy Co.*, 79 Atlantic Reporter, 246. In the opinion adopted by the court it is said that the language whereby the plaintiff granted to the defendant the "sole and exclusive right to purchase and market its entire output" of certain brick, and the defendant agreed to "purchase not less than 5,000,000 brick" during the year, meant that the plaintiff undertook to produce at least 5,000,000 brick, and that the defendant undertook to receive at least 5,000,000 brick, for the words were "not less than 5,000,000." The parties contemplated that these brick were to be manufactured and taken from time to time throughout the contract year, for they said that these brick were to be taken "as rapidly as the same can be produced by the first party with reasonable diligence." The court cannot agree with the defendant that this language modified the express agreement to purchase 5,000,000 brick so that the fair meaning of the contract was that the defendant undertook to purchase 5,000,000 brick if the plaintiff manufactured them; that

was not the natural meaning of the words in the contract.

Nor does the court agree with the contention that the proviso, or "provided" part of the contract, should be interpreted so as to aid the construction that the defendant did not undertake to purchase 5,000,000 brick during the contract year, but only such amount as the plaintiff might manufacture. There was certainly no obligation on the part of the plaintiff in this proviso to keep a stock of brick on hand to any extent.

The parties contemplated that there might be periods during the contract year when the market for such brick might be dull. If so, and if the plaintiff should have a stock of 1,500,000, then, in order to remove congestion of its storage capacity, it might, if it so chose, and only if it so chose, sell the excess to other parties. But the plaintiff was not given this right absolutely even then. It could do so only after having given notice to the defendant. The plaintiff assumed no obligation to sell the excess.

Then, it was in evidence that the plaintiff, in order to prepare for filling this contract, expended some \$10,000 in increasing the capacity of its plant. It was in evidence that the plaintiff was ready and willing to manufacture, and could have manufactured, the whole amount of brick called for by the contract, and that plaintiff duly notified the defendant of all this from time to time. It was also in evidence that the plaintiff was continuously calling upon the defendant to order out brick, because the plaintiff's plant was becoming overcrowded by reason of the failure of the defendant to remove the brick in stock.

It was true the defendant did not expressly refuse to take the brick, but nevertheless it did not take them, and the effect upon the plaintiff and upon its plant was just the same as if the defendant had expressly refused to take the brick. Wherefore, the court is of the opinion that there was sufficient evidence to show that the plaintiff was prevented from manufacturing the whole amount of brick for which the contract called by reason of the acts and omissions of the defendant; and is of the opinion that, under a proper construction of the contract and under the evidence, a recovery by the plaintiff can be sustained.

What, then, was the measure of damages? Compensation, of course, is the rule. And compensation, in such a case as this, is to be ascertained by deducting the cost of manufacture and delivery from the contract price. This is the rule adopted in the case of a contract for mining and delivery of coal. There is no reason for a different rule in the case of a contract for the manufacture of brick running throughout a year. There was no evidence that the plaintiff could have obtained a market for these brick, especially when it found that, as the year was expiring, the defendant was not likely to take the entire output of its plant.

LOOKING FOR SITE.

It is reported that the Enamel Vitrified Brick Co. Of Toledo, Ohio, is looking for a factory site, where there is a plentiful supply of fine sand.

WHEN SHUTTING DOWN A PLANT.

When shutting down a plant for any reason, such as taking an inventory, making repairs, etc., it is important to make sure that the private fire protection is given the same care and general supervision as it receives when the plant is in operation, hence the accompanying recommendations of the Factory Insurance Association, Hartford, Conn., to its members:

Always notify this office whenever you shut down your premises for any reason, and advise us as to the probable length of time which your property will be closed.

Thoroughly clean and sweep every part of the manufacturing buildings and storehouses, removing all sweepings and waste from inside the buildings.

Run stock off machines, such as cards, etc., to reduce danger of spreading fire.

Fill all the fire pails and casks and keep them full.

Try pumps, hydrants and hose; see that they are in good condition and ready for instant use.

Maintain continuously not less than 50 pounds steam pressure upon boilers where steam pump is depended upon.

Disconnect rotary pumps from all shafting of mill where possible and arrange them ready for instant use.

Examine, daily, tanks supplying sprinklers to see that they are full and in operative condition.

Examine sprinkler valves and make sure they are strapped or sealed open.

Maintain watchman service constantly, making regular rounds and records.

Close all fire doors and shutters, and doors to stairways, elevator hatches, etc.

ELECTRIC INSTALLATIONS.

An electric motor has been installed at the brick and tile factory at Hutchinson, Minn.

After a conference of the board of directors of the Remillard Brick Co., at Pleasanton, Cal., it was decided to do away with all the steam power in the large plant there, and accordingly, an order has been placed with the Livermore Light and Power Co., for four 35 h. p. motors. The motors will be allotted one to each machine and will be installed at once.

AMERICAN BRICK THE BEST.

A subscriber to "Brick and Clay Record," who has been engaged in brick work in Australia, tells us that the brick there are set in the kiln as soon as made, and when finished are only partly impervious to moisture and will not take a cement coat without chipping the face of the brick in order to give them a band for the cement. Plastering will not stick to the walls and will fall off when moldings are put up.

He says he experimented by covering the edge of a brick with equal quantities of cement and clean sand and placed it three feet underground for three months, when he took it out and gave it a tap with a hammer the cement fell off, showing very little band for mortar or cement. He says he has never seen any brick in Australia equal to the common stock of the Hudson river and the Philadelphia red front brick.

RAPID CONSTRUCTION.

The record for quickest erection and inclosing of an 18-story building is claimed by the contractors of the Underwood building, at Vesey and Church street, New York. The structure is an office building, 52 ft. by 76 ft., and about 220 ft. high. The steel superstructure was erected and inclosed with stone and brick in 69 days, chiefly in December and January, under unfavorable conditions of weather and daylight, snow storms and extreme cold making work impossible some days.

ASKS ADVICE IN BUILDING.

Mr. H. P. Frisch, manufacturer of drain tile and brick, at Mt. Pulaski, Ill., says he believes it to be the duty of every brick manufacturer to build a brick residence.

Mr. Frisch is contemplating building a home of brick and asks advice of the readers of "Brick & Clay Record" as to how to build the walls to avoid having a damp house. He will use press brick in connection with hollow brick, which he makes the same size as a building brick, with 2-inch holes through them. He would like advice as to whether to build a hollow wall or a 12-inch solid wall, or should it be furred on either side to insure dry walls? He expects to build the inside wall of the hollow brick, also the partition walls.

We would be glad if any of our readers can give Mr. Frisch information on the subject.

SCALING BOILERS.

The following suggestions have been offered in regard to removing scale from boilers:

When a boiler is to be cleaned, previous to inspection, it will be found that the work is much easier if the boiler is only emptied to the level of the furnace tops. The cleaner then enters, scrapes the exposed scale, and allows the water to sink at about the same rate as he is able to remove the scale. The object of this method of working is to keep the scale from being exposed to the air, which rapidly hardens it, as it is found that scale is much softer when under water.

It is, of course, necessary that the boiler should be completely cooled before the man enters. This is the great drawback to the method, as it takes so long to cool the water.

TILE MACHINES SHIPPED ABROAD.

Six American tile making machines have just been shipped from Trenton, N. J., to England and Australia. Four presses went to Melbourne and two to Stoke-on-Trent.

The presses are made after a special design by Hilmer Mueller and were made at the Model Machine Works, from which pottery and tile presses are shipped throughout the United States and Canada.

Edgar Walker, of the Australia Decorative Tile Co., came to America especially to investigate the tile industry in this country, and awarded to Trenton the palm of producing the best mechanical devices he had ever seen.

Mr. Walker visited all the clay centers of the United States, inspecting all the processes in the east and west, and lastly placed his orders here, where he said the best results were evidently obtained. The four presses he ordered weigh 3,000 pounds each, and each is capable of turning out, ready for kiln firing, 550 square feet of tile per day.

The Trenton tile presses are of the human power variety, said to be far more satisfactory than the mechanically driven types and calculated to produce a more lasting and uniform material. Trenton has long been accorded the leading position in progressive porcelain lines in America and now comes the added fame of furnishing the most improved machinery employed in the trade.

There are six tile and porcelain press factories at Trenton, all being busy throughout the year. These factories are kept busy usually in supplying the needs of local manufacturers, though the presses are sent to other centers now and then.



SOME BURNING COMMENTS.

We are pleased to note the interest taken by our readers in our various departments and we are glad to give space for discussions of any matters of general interest to our readers, and wish all to feel free to offer comments or criticisms.

Mr. Anton Vogt is satisfied with the article on "Salt-Glazing" only in part, and also does not agree with one part of the criticism of the "Rochester Manufacturer." He writes as follows:

Editor of "Brick & Clay Record": The question of salt-glazing is well worth discussing, but I believe any one who takes up the subject should sign his name to his comments. It makes us wonder who he is or who they are. Let the "burners" come out in your "Burners' Corner" and discuss salt-glazing and clay-burning in general, and let those who have the knowledge correct errors and misleading statements for the good of the clay-industry, and do it with a friendly spirit, not with a proud, know-it-all spirit, belittling the mistaken one's ability, but criticising those in the wrong and setting them right for the sake of those who have trouble in burning.

We all have room to learn; the burning question is not settled by a long way, and discussing burning troubles in the trade journals is the right step in the right direction.

Salt-Glazing.

I agree with the burner who says that when heavy goods are set in the kiln, the damper should be kept low, while water smoking the kiln, so as to prevent too strong a draft. It has been my experience that large pipe, such as 24, 27, 30, 33, 36 and 42-in. pipe, will fire-crack with too strong a draft, as the outside shell dries too rapidly; with too strong a draft cold air rushes into the kiln, cracking or rather crazing the large pipe.

A moderate draft makes the coal burn slowly, causes the pipes to sweat and dry gradually all through, instead of only on the outside. It may be in direct contradiction to all theory, but it is not opposed to practical customs.

I do not agree with the burner when he says: "The time after the bars are covered until the kiln shows a red glow inside should be at least 12 hours. This red heat should be kept unvarying for 5 hours so as to expel the latent gas."

As I understand this time limit, the burner means by expelling the latent gas, the oxidation period or the expelling of the carbon. This time is entirely too short to heat up or oxidize a kiln of heavy sewer pipe; some clays stand rapid heating and some do not. One cannot set a time limit; it depends on the behavior of a clay.

Salting.

I do not agree with the burner who says: "If the bars are set close the door may be left a little open, but great judgment must be exercised, as too much air over the bars may cause what is termed 'kiln-cracked goods.'"

I think he is mistaken there. Pipe air-check at the time when cold air enters the kiln, when the pipe change from a dull red to black, never as long as the pipes are

red-hot. It is my experience that salting with open fires never causes pipe to air-check.

The burner says further that if the goods are not of the desired shade after the second salting, the damper can be lowered and kept down until the proper color has been obtained. If these directions are carefully carried out, the goods will be a rich golden brown, but not every time; it may be a poor iron gray, similar to an unpolished stove pipe. The color and shine of the glaze depends on the degree of heat in the kiln and in the fireholes at the time of salting and also on the composition of the clay. For instance, if a clay containing much alkali is salt-glazed, it will not produce a rich golden brown, nor a poor iron gray, but a dirty green color.

I agree with the Rochester manufacturer (I presume it's Mr. Gorsline) when he says: "It is most unscientific and misleading to make general statements of this character, designating stages by the shift, publishing directions for burning and glazing ware the character of which is not given in the publication, basing directions upon time limits applied to almost any kind of ware."

I would be glad to hear from the "Burner" and his first "Critic" and trust we may meet again in the "Burners' Corner."

BURNING RECORDS.

The following table has been arranged to show the approximate temperature at which various clay products are burned:

TEMPERATURES EMPLOYED IN BURNING BRICK AND CLAY WARES.

	Cone.	Temperature F.	C.
Porcelain colors and lusters.....	.022 to .010	1094 to 1742	590 to 950
Common building brick, drain tile, stove tiles and the like.			
iron and lime-bearing clays.....	.015 to .01	1472 to 2066	800 to 1130
Roofing tile .....	.010 to .01	1742 to 2102	950 to 1150
Art pottery { Biscuit .....	.05 to .01	1922 to 2102	1050 to 1150
{ Glaze—Glossy .....	.010 to .02	1742 to 2138	950 to 1170
{ Matt .....	.05 to .04	1922 to 2210	1050 to 1210
Sewer pipe from shale.....	.05 to .01	1922 to 2102	1050 to 1150
Common cream brick from limey clays .....	.03 to .02	1994 to 2138	1090 to 1170
Paving brick from shales.....	.01 to .04	2102 to 2210	1150 to 1210
Sewer pipe from fire clay.....	.01 to .08	2102 to 2354	1150 to 1290
Whiteware pottery { Biscuit .....	.03 to .10	2174 to 2426	1190 to 1330
{ Glaze .....	.010 to .10	1742 to 2426	950 to 1330
Face-brick from fireclay.....	.03 to .10	2174 to 2426	1190 to 1330
Floor tiles { Encaustic .....	.04 to .07	2210 to 2318	1210 to 1270
{ Vitreous .....	.07 to .10	2318 to 2426	1270 to 1330
Paving brick from fireclays.....	.04 to .08	2210 to 2354	1210 to 1290
Stone ware, with salt or slip glazes .....	.05 to .10	2246 to 2426	1230 to 1330
Fireproofing .....	.01 to .08	2102 to 2354	1150 to 1290
Fire brick, cement and porce- lain .....	.10 to .20	2426 to 2786	1330 to 1530
Glass tank blocks.....	.10 to .20	2426 to 2786	1330 to 1530
Silica brick and hard-flowing glazes .....	.20 to .26	2786 to 3002	1530 to 1650
Drying shrinkage of clays.....		1 per cent to 10 per cent	
Burning shrinkage of clays.....		0 per cent to 8 per cent	

REMEDY FOR DISCOLORATION.

An exchange offers the following remedy: "When red brick of a fireplace become discolored with soot or have white spots on them, rub with a brick polish, the paste for which can be obtained at a brickyard or paintshop. If this paste cannot be found, rub the bricks with linseed oil, giving them all they will absorb. This treatment may be repeated if the bricks are much discolored."



WELL-PAVED STREETS.

The paved streets of Fort Wayne, Ind., are now as near a permanent improvement as this character of work can ever be regarded. Fort Wayne has ninety-four miles of sewers and fifty miles of asphalt and brick paved streets. By far the greater mileage of these streets has been laid upon a foundation of Portland cement concrete. The reason the mileage of paved streets has not been increased in proportion to the expenditure is that for a number of years over a quarter of a million dollars were expended for the repaving of streets upon which cedar block had been laid. Cement, brick and stone sidewalks costing \$96,376.31 were laid during later years. Streets and alleys were improved at a cost of \$75,383.11, and \$608,599.92 was expended for the building of sewers, the total length of the sewer system being eighty and one-half miles, varying in size from ten inches to six feet in diameter.

SIGNS OF PROSPERITY.

We have heard little complaint of dull times from fire brick manufacturers, in fact there is considerable improvement being added to fire brick plants, which is indicative of prosperity.

The Savage Mountain Fire Brick Co., of Frostburg, Md., has completed an addition which increases its capacity 2,000 brick per day. The company has under construction a new switch, another large shed and several minor improvements. At these works are made the famous "Savage Mountain" roof brick which have been made by the Gorsuch family for over forty-seven years. Chas. C. Gorsuch is president and John A. Caldwell, treasurer and manager of the company, which is one of the most prosperous in the Eastern famous fire brick district.

PAVING INVESTIGATIONS.

Mr. J. G. Howard, of the Bureau of Standards, Washington, D. C., is expecting to spend some time in the month of July in Cleveland, Ohio, in his research work, concerning the contraction and expansion of brick pavements.

OHIO ROAD NEWS.

Good roads in Ohio were given a bad jolt during the last fortnight by Governor Judson Harmon, and as a result the paving brick and block manufacturers were knocked out of a lot of new business, all of which was ready to be awarded.

The Governor vetoed the Hudson Bill, which raised a 1/2-mill levy, which would have produced annually \$3,250,000 for good roads in Ohio, and also the section of the McGuire State Highway Department bill which increased from 1 mill to 1 1/2 mills the maximum county road tax. The increase was expected to add an additional \$3,250,000 to the fund for good roads. Under the Hudson bill each of the 88 counties of the state received the same share, provided it raised an equal amount in its own taxes.

STRONG DEMAND IN PENNSYLVANIA.

Paving brick and block makers in the Western Pennsylvania fields are not complaining, but on the other hand are more than pleased with the condition of trade. The demand is strong, and municipal improvements are more extensive this season than for several years past.

The Pennsylvania Clay Co. has been awarded the contract for furnishing 900,000 pavers, to be used by the commissioners of Allegheny county in paving Crooked Run road. The price is said to have been \$14.70 per M.

The Waynesburg (Pa.) Brick & Stone Co. has been awarded the contract for furnishing the brick to be used in the improving of two miles of highway in Washington County. Over 550,000 brick will be required for the job.

PAVING NOTES.

Paving brick from Ohio Valley plants will be used in improving 17 streets in East Liverpool, which will cost over \$200,000.

Our Texas correspondendest states that it is probable that a number of towns in the state of Texas will take up the proposition of brick street paving during the next few months. The demand for pavers showed a very gratifying increase last year in Texas and it is anticipated that there will be a still greater sale of these brick during the present year.

A GOOD ORDER.

The Waynesburg (Pa.) Brick & Stone Co. has booked one of the best contracts let so far this season, when it secured the order for brick to be used in the improving of the Washington County, Pa., country roads. The first order was for 500,000 pavers. In nearly every instance where roads are to be improved in Washington County, brick are being used in preference to any other paving method.

PAVING AT SPRINGFIELD, MASS.

During the year of 1910, 882 ft. of brick sidewalk were built and 2,387 ft. of brick sidewalk were relaid at Springfield, Mass.

Springfield has 11.448 miles of paved streets, of which 3.7 miles are paved with Syracuse brick and .194 miles with Metropolitan block.

BRICK PAVING FIGURES.

Some statistics prepared by the Municipal Journal and Engineer on the subject of paving in 1910, show data collected from 460 cities. The reports show that of the permanent pavements laid, brick is by far the most popular, there having been 341 miles of brick paving laid on the streets of the cities mentioned during the period covered by the report.

WILL PAVE WITH BRICK.

The council at Franklin, Pa., have voted to use the Bessemer brick made at Youngstown, O., for the paving of streets there. Some controversy was aroused over the question of colors but the selection resulted in the use of a red brick.



DRAIN TILE COST ACCOUNTING

By C. B. Platt, Van Meter, Ia.

Keeping cost accounts in the production of tile is not particularly difficult, although one operation, such as burning, is often conducted in connection with an assortment of sizes and, of necessity, without the assistance of a somewhat difficult time-keeping observation, the handling of the dry tile to the kilns and wheeling the burned product is a mixed time operation.

This being the case, it will be found that a tonnage basis is probably the most satisfactory system of cost accounting to adopt, whether the process is exhaustive or is merely for the purpose of determining complete cost without the distribution of the cost in all departments of the process figured out on each size of tile.

While tile weights are subject to frequent changes, owing to excessive die wear and consequent frequent renewals, it will prove quite satisfactory to retain, during a specified period, a given weight for each size of tile as a basis on which to figure size cost in its completeness.

Cost figuring, particularly in connection with the manufacture of clay products, is a dangerous thing. Incompletely carried out it is apt to lead one to conclusions, as to low cost, which are based too much on speculation and during times of slack demand are apt to lead one into shoal waters. For instance: machine count, taken as a basis for a day's run or a week's run, contains all the waste of drying, setting, burning and wheeling, which is dead loss and must be trimmed out.

A most marked shrinkage is common between the machine count and the count from sales and stock on hand.

The real output, or capacity, of a plant is the No. 1 burned product, and this output is the only true basis upon which to figure cost.

The figuring of cost has a somewhat diversified set of ends in view. Its first object is to supply a basis for determining the proper selling price and to regulate one's tendencies to "compete" or to lead in a declining market.

Its second object is to supply a basis for determining the possibilities for improvement in methods and economies in production, and in this division the system is much more exhaustive, for it means the apportioning to the various departments of labor, the necessary quota of expense in producing each size of tile.

Under these two divisions of the object in figuring cost, one can spend years of profitable study and through proper comparisons or persistent comparisons of cost sheets, stop many leaks and build up many improvements.

The figuring of cost should be considered a real necessity, at least in the first division mentioned above, in any sized plant, for a safeguard if for nothing more.

This operation may be very simple. Commence at the beginning of the week or pay period and figure your plant output the out-count of No. 1 ware taken from the kilns. A careful check or out-count is essential and where any particularly large output is made, it will pay to have a faithful checker to record the number of each size taken from the kiln.

The office records should be kept continuously, or totals in each size carried forward until the end of the fiscal year. An accurate check on this count can be kept by recording the sales of each size as made and the sum of such sales added to the invoice of stock on hand will at any time give a check on the count and assure the correctness of the figuring.

To use this record as a basis of cost determination it will only be necessary to multiply each size total, at the close of any payroll period, by the weight of each single piece in the various sizes, add these products together for the total tonnage production and divide the sum in dollars of all expense, pay-roll, office and sales expense, insurance, taxes, interest, depreciation, supplies, fuel and every expense by the total weight of finished ware, taken from the kilns, and the result will be the cost per ton, in fractions of dollars. Multiply this result by the weight of 1,000 pieces of ware, in any size, and the result will be the cost per thousand of any size figured.

As in the case of out-count totals being carried forward, the expenditure totals should also be carried forward from period to period until the end of the fiscal year.

An illustration of figuring, though not showing any real or probable figures, but merely figures for convenience, may be of assistance. We will assume that the work of emptying a full kiln of ware is begun on the first day of the week or pay-roll period and checks out as follows:

20,000 4-in. tile, weight 6 lbs., total weight.....	120,000 lbs.
5,000 5-in. tile, weight 8 lbs., total weight.....	40,000 lbs.
2,000 7-in. tile, weight 12 lbs., total weight.....	24,000 lbs.
1,000 8-in. tile, weight 16 lbs., total weight.....	16,000 lbs.

Total weight in kiln.....200,000 lbs.

We will assume that during the week three kilns of same total weight are handled and the total period weight, or output, would be 600,000 lbs.

The pay-roll shows all labor to be \$500. Supplies, fuel, office, salaries, and period proportion of taxes, insurance, interest, depreciation, etc., \$400. Total expense for the period, \$900.

\$900 divided by 600,000 equals \$0.0015.

The weight of a 4-in. tile being 6 lbs., 1,000 4-in. tile would weigh 6,000 lbs.; 6,000 multiplied by \$0.0015 (the cost of 1 lb.) is \$9, the cost of 1,000 4-in. tile, and multiplying the weight of 1,000 tile of any size by \$0.0015 will

give the cost per thousand of such size at the end of such a period.

Now this is carried forward on the records by carrying the totals as follows:

Total weight at end of last period, 600,000 lbs.

Total expenditures at end of last period, \$900.

Then, when the weights and expenditures are added to these totals at the end of any pay-roll period, the totals are used to again determine the cost per pound as above, etc.

Is this period accurate? No; and again, decidedly, yes. It will become very accurate after it has been continued long enough to contain an average set of conditions and will give cost from which are shorn all wastes. Cull stuff should never be considered in the count. It is a decidedly questionable asset and can best be handled as direct profit and loss, figuring as sold, and figuring only in the yearly profit showing.

NEED OF STANDARD SPECIFICATIONS.

The committee composed of Prof. A. Marston, Seth Dean and W. B. Warrington, appointed by the Iowa State Drainage Association to look into the matter of Standard Specifications, opened the report with the following interesting statements:

"A very serious situation has developed in Iowa during the past season in connection with the construction of large tile drains. An especially disastrous failure of large drain tile occurred in Sac county, Iowa, under the load of earth filling in the ditch, the damage running up to several thousands of dollars. Following this failure, intelligent and reliable experts have made examinations of a number of large tile drains in the northern part of the state, and they report that many of the pipe in such drains are found cracked when the depth of earth filling exceeds five to eight feet. The above is true both of cement and clay tile drains. We also have reports from time to time of cracked pipe found in examinations of city sewers.

Great Need For Standard Specifications.

"It appears, therefore, that at present many large tile drains have been built of material not sufficiently strong to stand the loads which come upon them in the ditches. When we understand that Iowa has already completed, within the last few years, or put under way, \$17,000,000 worth of drainage work in thirty-one counties in the northern part of the state, and when we further realize that the construction of large tile drains in preference to open ditches is constantly growing in favor, and that hundreds of thousands of dollars worth of such work will undoubtedly be under way the present season, then it may readily be understood that some immediate remedy for a possible disastrous state of affairs must be found.

"Up to the present, drainage engineers have had no standard method of making tests of the strength of drain tile, nor have they had at hand any data on the strength actually developed by tile which are considered to be of fair quality. Hence, it is impracticable for drainage engineers to prepare proper specifications which will insure satisfactorily strong tile, and equally impracticable for the manufacturers of tile to be certain that their product will stand the actual conditions of use. It is absolutely essential, therefore, that specifications for standard methods of making tests should be adopted at once, to govern in Iowa during the coming construction season, even if later it becomes necessary to revise the specifications. In fact, such revision, should it prove necessary later, will be no more serious than the revision which has just been made of the standard specifications.

DRAINAGE OF WET LAND AREAS.

The following has been given out by the U. S. Geological Survey, of which George Otis Smith is director:

"The drainage of the vast swamp areas of the country—approximately 70,000,000 acres—is a matter of water engineering and the study of run-off is of first consideration in connection with any drainage project. Drained swamp lands become generally the most fertile of our agricultural areas and the reclamation of the swamps of the United States should add from \$2,000,000,000 to \$4,000,000,000 to the nation's assets.

"Finally, in the matter of flood prevention, a thorough knowledge of stream flow, both in the contributing areas and along the great lowland rivers, is the first necessity. The flood damage in the United States is estimated to be in excess of \$100,000,000 annually.

"Water-Supply Paper 263, which is the third volume issued covering the study of the Ohio River basin, contains a large number of records made of the flow of numerous tributaries of the Ohio from 1899 to 1910. A copy may be had without cost on application to the Director of the Geological Survey at Washington, D. C."

MACHINES FOR TESTING BEARING STRENGTH.

To meet the urgent need of machines for testing the bearing strength of drain tile the Engineering Experiment Station at Ames, Iowa, has devised three, for use under different conditions:

The Ames Junior Testing Machine consists of an ordinary platform scales of 2,000 pounds capacity, placed in a wooden framework, with an ordinary jack screw to apply the pressure. We find that the 2,000 pound scale can readily be loaded to 5,000 pounds without apparent injury. The total cost, including scales, would be about \$50.

The Ames Senior Testing Machine. This is similar to the Ames Junior machine, but with a longer framework and a five to one lever by which tests can be made up to ten thousand pounds without loading the scales beyond their rated capacity. The total cost, including scales, would be about \$60.

The Ames Standard Testing Machine is a 16,000 pound testing machine which costs, when built, \$100. It is convenient for making many other tests besides those on sewer pipe and drain tile, and will be a good form for a city or county to construct.

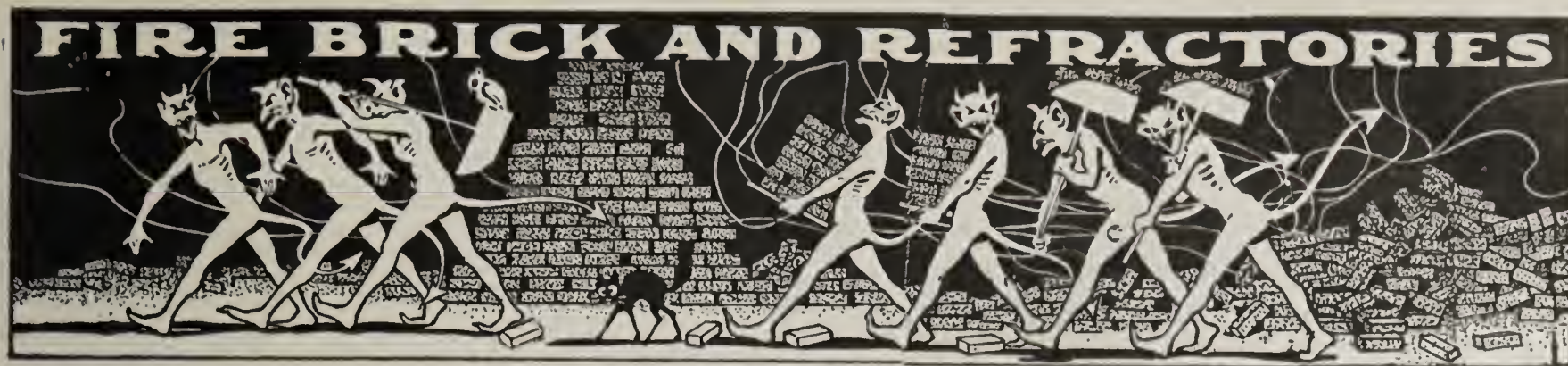
WILL MAKE DRAIN TILE.

W. C. Corbett, owner of the Brick Plant at Corvallis, Ore., will enlarge his plant and arrange for the manufacture of drain tile, for which there is a great demand throughout Oregon.

CERAMIC ENGINEERING.

The Richardson-Lovejoy Engineering Co., located in the Schultz Building, Columbus, O., has just issued a new edition—the fifth—of "Ceramic Engineering," in which considerable new matter of interest to clay workers has been introduced.

Exploitation of properties, sampling and testing of clays, plant construction, dryers, kilns, furnaces, combustion, kiln losses, etc., are discussed under separate headings from an engineering standpoint. Nearly thirty pages of illustrations accompany the text. The booklet will be mailed free to any one interested.



PROSPEROUS MARYLAND PLANT

Extensive Improvements Planned—Signs of Prosperity at the Plant of the Union Mining Company

That the Union Mining Co., whose offices are in Baltimore and works at Mt. Savage, Md., are taking a hopeful view of the future is evidenced by the report of its annual meeting, held recently. This company is putting forth extra efforts to be in readiness to take care of the revival in business, which it has every confidence will follow the present period of hesitancy.

If all business men of the country would take this view of the situation and make a united effort to prevent business stagnation there would be no panics, for it is a well established fact that once the wheels of industry

this end in view, a committee from the company spent practically the entire month of May investigating the merits of the various modern methods and machinery that could be used in the manufacture of high-grade fire brick and, during the course of their investigations, they visited many of the largest fire brick operations in the East and West.

Plans for the erection of an extensive addition to their already large plant were then submitted to and adopted by the directors. The new extension is now under construction and when completed, the Mount Savage plant



General View of the Plant of the Union Mining Co., Mt. Savage, Md.

are stopped, nothing short of Herculean efforts can start them going again.

The annual meeting of the directors of the Union Mining Co., proprietors of the Mount Savage (Md.) Fire Brick Works, which have been successfully and continuously operated since 1841, was held in their general offices in the Fidelity Building, Baltimore, Md., on June 6th.

The president reported that the company is enjoying an excellent demand for their "Mount Savage" and other brands of fire brick, so much so that in order to handle promptly the large volume of orders being received it has become necessary, for the second time in a period of six years, to increase the capacity of their works. With

will have a capacity of 100,000 9-in. brick per day. It is not proposed, however, to operate the entire plant on standard brick and shapes exclusively. A large portion of it will be devoted to the department having in charge the manufacture of special and difficult shapes used in the iron, steel and allied trades, the lime and cement industries, water gas linings, gas bench settings, etc.

Before the new construction work was decided upon, the company spent considerable money prospecting and boring with diamond drills on its extensive clay lands, the result being that they are assured of a sufficient supply of the celebrated "Mount Savage" flint and plastic clays to last for centuries.

The Union Mining Co. was among the first of the fire brick manufacturers of the United States to realize the importance and necessity of providing each industry with a fire brick, made with a view of withstanding its particular and peculiar conditions. To accomplish this, its research department is constantly at work on the question of mixing, grinding, and burning its clays and calcined material and it is this close attention to the requirements of their customers that has enabled them to build up such a faithful and loyal following among the users of fire brick generally.

The company maintains offices in Pittsburgh and New York, in addition to those at Baltimore and Mount Savage, Md., and has special representatives in Chicago, Philadelphia, Boston, Indianapolis, Cleveland, Cincinnati and San Francisco. The officers are H. Crawford Black, president; Van Lear Black, vice-president; A. T. Burr, secretary and treasurer; W. L. Hamilton, general superintendent; and Charles H. Claiborne, general sales-manager.

The plant of the Union Mining Co. at Mt. Savage is situated on the Cumberland & Penn. R. R. The buildings are all of a substantial character, the office building being a solid brick one. The clay used is of two kinds—flint

then cooled for three or four days, making about ten days time for the entire burning process.

A large supply of shapes of various kinds are kept in storage in an immense shed, making it possible to maintain this company's reputation for prompt shipment. As the assortment of products is very extensive the stock must be correspondingly large.

Each particular industry must be carefully studied, its



Supply of Clay Always at Hand.



Goods on the Drying Floor.

and plastic—and is mined the same as coal, the mines being several hundred feet below the top of the mountains. The company keeps an immense supply of clay on hand so that if troubles arise in the mine, it will have a sufficient supply on hand for several years. The clay is ground in the dry pans and after being screened is conveyed to the wet pan and thence to the molders.

The plant is virtually composed of two yards, with a total capacity of 60,000 brick per day. The main buildings are two story structures, the lower floors of which are heated, one by steam and the other by stoves, the heat passing through flues located under the floors. The upper floors of these buildings are used exclusively for drying special shapes. After molding, the brick are dried until they are in proper condition for repressing. After repressing they are again placed on the floors and dried until ready for burning, when they are wheeled on barrows to the kilns, of which there are about fifteen, varying in capacity from 30,000 to 75,000. A slow heat is maintained for two days until the brick are thoroughly dried, after which they are burned from six to seven days and

conditions and requirement considered, and brick made to withstand such heats specifically. This is accomplished by manipulating the clays, in the grinding screening, mixing and ageing.

The Union Mining Co. also engage in mining coal for their own use and for shipping in large quantities.

Their "Mt. Savage" brand of fire brick has a favorable reputation throughout this country as well as in Mexico, South America, Cuba and far away Japan. They



Excellent Shipping Facilities of Union Mining Co.

were first made in 1841 and have grown in favor since that time.

CLAY SCRAPINGS.

A new brick company will soon begin operations at Schenectady, N. Y. The owners are Chas. Beckwith, John D. Miller and Wm. Emmet and Richard Emmet.

The lands and plant of the New York Press Brick Co., Canandaigua, N. Y., have been sold for \$20,000 to the Tioga County Savings & Trust Co., of Wellsboro, Pa.

The Dennison (O.) Sewer Pipe Co. has increased its capital from \$75,000 to \$100,000.



VITRIFIED PIPE VS. CONCRETE

A Paper Read Before the Illinois Society of Engineers and Surveyors at Their Annual Convention in East St. Louis, January 27, by E. Argo, Secretary of the Blackmer & Post Pipe Co., St. Louis, Mo.

Someone, writing on the law of economics, has said, that of two materials capable of performing the same service, that one is most economical which does its work at the least annual cost for maintenance. A banker has stated that a safe and profitable investment at a low interest rate is good financiering, and that a doubtful investment at a high interest rate is bad financiering. It must be equally true that the use of a durable material at a fair price, with a low maintenance cost, is good engineering; while the use of temporary material at a low price, with a high maintenance cost, is bad engineering. In the selection of materials it is difficult for an engineer always to balance these conflicting conditions. When they do not exist his course is clear. The purpose of what follows is to make his course clear when cement and vitrified pipe are competing for his choice.

The vitrified pipe and tile manufacturers point to sixty years of cement pipe failures and have submitted an array of testimony by chemical and ceramic experts to show that the elements which have destroyed cement pipe in the past will continue its destruction. The cement pipe manufacturers make the same accusations against vitrified pipe and tile, supported by another sort of expert testimony, which, however, lacks the element of proof that a large percentage of actual failures of vitrified pipe would give them.

The controversy has been carried to the engineers and the public through scientific journals and reprints of reports by members of different technical societies for over five years, and it is entirely consistent that the engineering fraternity should call a halt on debate and ask for the substantiation of some facts.

The manufacture of good cement is an exact science. Its proper preparation for use is equally scientific. Both are easily accomplished in the laboratory of a scientific chemist. To the seeming impossibility of duplicating the work, the results of the laboratory work, by the use of wheelbarrows, shovels and hose as substitutes for apothecary scales, is due many of the failures of concrete construction. This reference is to all classes of concrete construction. This paper will relate only to its failures in storm and sanitary sewers, and in drainage districts, which were due, not only to the faulty mixture of the concrete, but to the operation of a chemical law that is unchangeable either by expert or careless workmanship. A chemical reaction that is unavoidable even though the mixture may be scientifically prepared, because the acids of the sewer will destroy cement whenever they are in contact, and without respect to the scientific proportions of sand, gravel and water with which it is associated. Without injecting any opinions or arguments of our own, we offer

actual results in proof of claims heretofore made, and now repeated, that concrete pipe is unfit for use in storm or sanitary sewers, or in agricultural drains, and you are not asked to assume as true any statistical statements



Cement Tile Disintegrated by Slough Water (Carbonic Acid) and Frost.

which cannot be verified by any one at an expense of less than one dollar.

The points at issue between the manufacturers of these two very excellent materials, are: Which is the most porous? Which has the greatest crushing strength? Which has the greatest hydrostatic strength? Which is the most effected by sewage acids? Which has failed the

most? Which is the most durable? Which is the best?

We offer the following proofs of each of the above qualifications in the order in which they are named, giving our authority for all that pertain to statistical information, without asking you to assume that any of them are true until after you have made such investigations as you may choose to make.

Porosity—Absorption.

Tests by E. J. Fort, city engineer, Brooklyn, N. Y.

Samples dried 24 hours at 212 deg. F., weighed, then immersed in water for 168 hours.

PER CENT OF GAIN IN WEIGHT.		
Diameter.	Vitrified Pipe.	Cement Pipe.
12 in.	4.07%	6.69%
15 in.	3.73%	7.46%
18 in.	3.57%	6.57%
24 in.	3.64%	6.73%
Average	3.75%	6.86%
Average difference in porosity, 5.93%.		

The very best quality of both materials were used, and the above result establishes the excessive porosity of concrete pipe.

Mr. R. L. Humphreys, expert for the government at the Forest Park testing laboratory, is authority for the published statement that with a mixture of cement having a specific gravity of 100 per cent, 87½ per cent is the highest obtainable efficiency of the set concrete, and this result can be accomplished only in a laboratory where all the conditions are perfect. It must be true, therefore, that with the best cement that it is possible to make there is 12½ per cent of porosity to start with.

Crushing Strength.

Because there is no obtainable record of the crushing strength of any but 36 and 42-inch concrete pipe, this comparison is confined to these two sizes.

POUNDS SUSTAINED TO PIPE 3 FT. LONG.			
Diameter.	Concrete Pipe.	Vitrified Pipe.	% of Difference.
36 in.	20,000 lbs.	45,210 lbs.	126%
42 in.	28,320 lbs.	41,049 lbs.	45%
Average difference	80.5%		

A test to show the maximum stress per square inch of these two materials was made by the University of New York with the following result:

	Area (sq. in.).	Load.	Stress per sq. in.
Cement Briquette, 1 in. thick.	5 6/10 in.	12,600 lbs.	2,250 lbs.
Vitrified Briquette, 1 in. thick.	4 5/10 in.	22,450 lbs.	4,977 lbs.
Difference, 122.8%.			

No words can add to the force of the above exhibit.

Hydrostatic Strength.

Three sections of 36-in. reinforced concrete pipe, 3 ft. long, 45⁄8 in. thick, coupled together, burst at 40 lb. per sq. in.

VITRIFIED PIPE.	
1 Section 24-in. Vitrified Pipe, 2 in. thick, tested to 100 lbs. sq. in.	
1 Section 27-in. Vitrified Pipe, 2¼ in. thick, tested to 100 lbs. sq. in.	
1 Section 30-in. Vitrified Pipe, 2½ in. thick, tested to 100 lbs. sq. in.	

No greater pressure could be applied from city water main. No record of hydrostatic strength of 36-in. vitrified pipe.

If the vitrified pipe had broken at 100 lb. per sq. in., it would still have shown an excess of 250 per cent over a 36-in. cement pipe, selected for the purpose and the result used as an advertisement.

Acid Test.

By S. V. Peppel, chemical engineer, Columbus, O.

	Cement Pipe.	Vitrified Pipe.
Loss to a 1% ascetic solution:		
12 hours	0.40%	0.00%
24 hours	0.80%	0.00%
Loss to a 1% solution hydrochloric acid:		
12 hours	1.25%	0.00%
24 hours	1.76%	0.00%

Loss to a 5% solution ascetic acid:		
6 hours	1.81%	0.00%
12 hours	3.01%	0.00%
Loss to a 5% solution hydrochloric acid:		
6 hours	6.78%	0.00%
12 hours	7.04%	0.00%

Ascetic acid is produced by vegetable fermentation. Although one of the weakest of acids it is one of the strongest in its reaction with cement. Hydrochloric acid is the result of a combination of carbonic and sulphuric acids, and is very destructive in its effect on cement.

In a pamphlet entitled "Sewer Facts," there is a record of acid tests made by the University of New York showing the following results:

	Cement Pipe	Vitrified Pipe
Nitric Solution.... 100%	Entirely disintegrated	Unaffected
Nitric Solution.... 75%	Disintegrated	Unaffected
Nitric Solution.... 50%	Generally soft with small solid core	Unaffected
Nitric Solution.... 25%	Surface slightly disintegrated	Unaffected
Hydrochloric Sol.. 100%	Absolutely disintegrated into a soft mixture	Unaffected
Hydrochloric Sol.. 75%	Small solid core; outside gone	Unaffected
Hydrochloric Sol.. 50%	Apparently more affected than in previous solution	Unaffected
Hydrochloric Sol.. 25%	Slightly disintegrated	Unaffected

All of which shows as conclusively as laboratory tests can show that sewage containing these acids, even in low percentages, will destroy cement pipe and that they will not destroy vitrified pipe.

The only additional proof that would seem to be needed is that sewage contains these acids, or others equally destructive in their effect on cement, and the following results are submitted.

6,000 ft. 18-in. concrete pipe sewer built at Lenox, S. Dak., in 1907, all but 450 ft. had failed in the fall of 1909. Disintegrated by alkali. Brooklyn, N. Y., has 480 miles of cement, and 320 miles of vitrified pipe sewers. 95 per cent of their annual expense for repairs is expended on the cement pipe.

At Ames, Ia., a line of 26-in. cement tile, 3 ins. thick, disintegrated in one year. At Humboldt, Ia., a small cement tile culvert disintegrated in four years.

In Sac County, Ia., the drainage commissioners tried to save \$3,500 by letting a contract for 6,000 ft. 36-in. cement tile. 980 ft. was laid with a machine, covered and the fill settled with water. The whole 980 ft. broke under an 8 ft. fill. Relaid with vitrified tile.

Near Shabbona, Ill., in October, 1909, S. T. Colby laid 50 rods of 30-in. cement tile which broke under 2 ft. of earth. They were poured tile, 2½ ins. thick. At Exeter, Neb., a 24-in. concrete pipe made in the fall of 1907, laid in April, 1908, 3½ ft. deep, all crushed and replaced in August, 1908, with vitrified pipe at an expense of \$800 to the contractor. Reference, Mr. W. W. Kemberly, city clerk.

A few years ago a lot of cement pipe sewers were built in and around Colton, Cal., which failed, and a contract was recently let to replace them with vitrified pipe. Before reconstruction was begun the local cement pipe factories guaranteed the engineer that they would underbid the vitrified pipe \$12,000 if he would relet the work; this in face of the fact that the work to be done was to replace their failed material, and at the expense of the property owners.

In a statement from S. W. Robbins, mayor of the city of Tupelo, he states that the vitrified pipe shown were laid in 1882 in the city of Tupelo, Miss., the same being 24-in. pipe. In February, 1910, they were forced to have this line of pipe taken out on account of the city requiring a larger sewer. The pipe was found in just as good condition as when laid, and to-day rings as clear as a bell. There is no reason why the pipe should not

last indefinitely. This again demonstrates the cheapness and durability of vitrified pipe over other materials.

These are good illustrations of the disintegrating effects that weather and the elements have on concrete.

We submit that what has been shown you establishes the efficiency of vitrified over cement or concrete pipe in the following percentages: Porosity, 95.93 per cent; crushing strength, 80.5 per cent; hydrostatic strength, 250 per cent; stress per sq. in., 122.8 per cent; acid test, 100 per cent; and that the durability of cement is so dependent upon the absence of the salts and acids that are natural to the sewers and the soil, which if present, are certain to destroy it, proves it an unfit material for any kind of drainage.

It is not claimed that every purchaser of a set of cement forms with a prescription for making cement pipe, knows that there is no escape from its certain destruction when he sells it to a farmer, or to a street commissioner, but no one after making a chemical test could avoid knowing it. Why do the cement people cheapen their material and indulge in competition that is unfair and unjust alike to the public and themselves by permit-



Cement Post, Crumbling from Exposure to the Atmosphere.

ting its use for purposes prohibited by the laws of natural science?

There is doubt on this point, too, in the minds of the profession. Engineers have personally reminded me that our own city of St. Louis is putting more concrete in sewers than any other city in the country—which is true—but the minimum diameters for concrete in St. Louis is 7 ft.—from that up to 29 ft.—and the specifications are iron clad, that every one of them must have a vitrified invert to the spring line of the arch, so there may be no permanent contact of the average flow with the concrete part of the structure.

We have also been asked to explain why the alkali and other salts of the soil will destroy cement in a sewer and not in the foundations of buildings, or bridge piers built in the same neighborhood. The answer is that the cement pipe is from 1 to 4½ ins. thick. The foundation walls and bridge piers are from 2 to 5 ft. thick. The difference is in capillarity. In the case of the pipe there is percolation through a thin wall from without to a cavity within. In the case of the foundations and piers,

they are a thick solid mass and the damage can only be by superficial contact.

In my judgment the general demand for economy in the cost of both public and private work is largely responsible for the use of cement pipe and tile—too often the material whose first cost is the least is mistaken for the cheapest to use.

The art of preparing cement is a fine mathematical problem that cannot be safely left to the practical eye of workmen. The people's investments in sewers and agricultural drains, and in culverts, are permanent investments of money for the improvement of millions of dollars' worth of property, and they rightly expect you gentlemen to make these investments in materials whose durability has been established by time and use.

The fact remains that no substitute for vitrified pipe has been discovered and that the cold, unfeeling rule of addition and subtraction is the one to use in measuring the merits of materials, and on such a comparison it will be found that vitrified pipe is better and cheaper than any other material.

HAD A GOOD YEAR.

In his annual report to the stockholders of the American Sewer Pipe Co., a portion of which appeared in our journal, President George R. Hill has this to say: "Our efforts have been concentrated on increasing the physical value of our plants, operating them to the fullest capacity, thereby enabling us to produce material at minimum cost, notwithstanding the deplorable conditions existing in the trade the past year—the low prices which prevailed—as well as the large increase in the cost of raw material and advance in wages. The physical condition of the properties has been kept up to the fullest extent during the past year by the expenditure of over \$170,000 for maintenance. We have also added approximately \$32,000 in permanent improvements.

PRICES ADVANCED.

It is reported that at a recent meeting of sewer pipe manufacturers it was agreed to raise the price of all sizes of pipe. It is a well known fact to those acquainted with conditions that there has been little or no money made for several seasons by sewer pipe manufacturers, who had vast sums of money tied up in factories and lands, and we are glad if they have found a way to get better prices for their goods. While it is true that the public will have to pay for the additional profit which may accrue, there is no good reason why the manufacturer in this line should not have as good a right as the butcher and grocer to a fair profit for his product, and that the stockholder may have some income from money invested.

Leading companies in the manufacture of sewer pipe are the American Sewer Pipe Co., of Akron, O., which owns twenty-seven factories, the Robinson Clay Co., of Akron, O., which operates nine plants, the St. Mary's Sewer Pipe Co., St. Mary's, Elk County, Pa.; the Stratton Fire Clay Co., of Empire, O.; the East Ohio Sewer Pipe Co., of Irondale, O.; the Patton Clay Manufacturing Co., of Patton, Pa.; the Granite Clay Co., of Magadore, O.; the New York Sewer Pipe Co., of Rochester, N. Y.; the Buckeye Sewer Pipe Co., of Summit, O.; the Buckeye Fire Clay Co., of Uhrichsville, O.; the Robinson-Graves Sewer Pipe Co., of Uhrichsville, O.; the Evans Clay Manufacturing Co., of Uhrichsville, O.; the Excelsior Fire Clay Co., of Lisbon, O.; the United States Sewer Pipe Co., of Pittsburg, and the Shawmut Clay Co., of Claremont, Pa.

FATE'S NEW PUG MILL.

In conformity with its idea of always keeping abreast of the times, the J. D. Fate Co. has developed and already put on the market its special "Double Shaft Pug Mill."

The machine seems to be easily in a class by itself, as it is constructed on lines similar to their well known double shaft combined brick and tile machines that are noted for their thorough pugging, and is built for hard service and large capacity. This has been developed in response to the large demand for a pug mill that will pug and temper material for ware that requires the most thorough preparation, and one that will so prepare material in large quantities.

The pug shell provided is of heavy boiler plate and is 32 ins. by 9 ft. The frame extends beyond the shell in front so as to permit of a vertical feed. The shafts are of ample size, with the bearings all of the ring oiling type, the same as is used in electrical machinery, which insures the proper oiling of all bearings. The Fate Co. is the first to incorporate this method of lubrication in clay working machinery. The back pressure on the pug shafts is amply provided for by anti-friction thrust bearings of the submerged type.

The hubs for holding the tempering blades are of the divided or hinged pattern so that any hub or blade can be removed or replaced without disturbing any of the others or removing the shafts.

The machine is mounted on heavy channel iron, the extreme length being 20 ft. 1 in. and the width 4 ft. $7\frac{3}{4}$ ins. The pulley is mounted on the center line of the machine, and the driving shaft is supported by an outboard bearing on the channel iron foundation. When run at proper speed, this machine should easily prepare 100 tons of material per 10 hours.

Two of these mills have recently been placed in the Hobart, Ind., plant of the National Fireproofing Co., and give every promise of filling a long felt need in the preparation of material in clay working plants.

The J. D. Fate Co. will be glad to furnish detailed information and prices to any and all interested.

SWIFT KILNS AND FURNACES.

The Swift kilns are well known to the older clayworkers and are in successful operation in some of the oldest and most progressive clay plants in the United States and Canada.

The idea of burning any kind of clay ware with slack coal was first conceived by Mr. Swift, and several years ago he designed a slack burning furnace kiln and, after using it at his own plants, for two years, offered it to the trade. At first the idea was ridiculed and it was only by taking the entire responsibility of changing kilns to his design, furnishing his own capital and guaranteeing results from the first burn that he was enabled to interest the clay manufacturers. Many of the early day Swift kilns are still in use and giving good service.

Mr. Swift tells us that after the first success of his kiln and furnaces became known several different designs or imitations were offered but they were soon in the discard, as Mr. Swift's rights covered the only practical way to coke and burn the slack. The kilns he has to offer are of various designs, round, square, up and down-draft, with and without grates, solid or open bottom and is prepared to furnish a kiln to suit requirements and results are guaranteed.

Mr. Swift also has a portable furnace for those who use the scove kilns that have no permanent walls or furnaces, the burning being accomplished by firing direct in the arches. This furnace can be moved from kiln to

kiln, burns slack or any grade of coal (slack preferred owing to its cheapness). This furnace should appeal to manufacturers who wish to remove the entire kiln clean as they empty and who do not wish to be bothered with permanent walls and furnaces. These portable furnaces can be moved from kiln to kiln at a very small cost and necessitates the purchase of only a few furnaces for a large capacity plant. Mr. Swift claims with this furnace he can watersmoke the most delicate clays with slack coal as well as finish the burn with the same grade from start to finish, get even burns and arch brick to be all line brick from ground to upper jet, from side wall to side wall, also have the arches clear of accumulated cinders and ashes, which are prevalent where direct firing is the custom. A line to Mr. Swift, at Ottawa, Ill., will secure all the information you desire in regard to the Swift kilns or portable furnaces.

FIREPROOFING GAINS A POINT.

The National Fire Proofing Co. reports a very fair business, while Pittsburg building conditions are extremely quiet, yet marked buoyancy in the very near future is anticipated. One of the last acts of the city council was to pass an ordinance specifying how terra cotta hollow tile should be used in building construction. As strange as it may appear, while skyscrapers were allowed to use it in general fireproof construction, the building laws were such that it could not be used in the ordinary dwelling for outside wall purposes, because the building regulations did not so specify. Many persons desired to use this material since the absolutely fireproof residence is gaining such headway elsewhere, especially in New York and New Jersey. Since Pittsburg councils have recognized hollow tile, nothing is in the way in Pittsburg to introduce it in general building construction, although the law as it now stands, it is said, is not as broad as many would like to see it. The company reports that the volume of trade being booked in New York is good and a noticeable improvement is expected to take place in Pittsburg in the near future. There is much inquiry reported regarding the use of this company's materials.

The East Peoria (Ill.) Brick Co. are furnishing brick for the new Douglas School, Jefferson Hotel and a church at Washington, Ill.

The Fond du Lac (Wis.) Brick Co. has started operations at its plant, after adding a number of improvements.

The Sheldon Brick Co., Champaign, Ill., are producing brick having a smooth dark red mottled surface, which are especially popular for bungalow construction.

Mr. L. E. Armstrong, president of the Plymouth Clay Products Co., Fort Dodge, Ia., gave his daughter a wedding gift of a farm, worth \$50,000. Who says there is no money in the brick business?

The Burlington Railway Co. are erecting a \$20,000 press-brick depot at Knoxville, Ia.

The brick season is in full swing at Cedar Rapids, Ia. About 12,000 brick a day are being turned out at the Geo. McBride plant and 18,000 press brick a day at the plant of Miles & Cox. The brick manufacturers are looking forward to a busy season, as there are many building projects in sight.

At Rockford, Ill., much favorable comment has been heard concerning the new building erected by the Columbia Coffee & Tea Co. The building is faced entirely with Tiffany enamel brick and presents an exceedingly neat and clean appearance. This brick is to be used to face the Insurance Exchange building in Chicago. The Steger building in Chicago is also faced with this material.



KENTUCKY SAND LIME PLANT.

In the beautiful mountains of Eastern Kentucky at Dudley, Ky., is located the up-to-date plant of the Winchester Granite Brick Co., whose offices are at Winchester. The grounds comprising 100 acres are situated on the L. & N. Ry. The sand stone is mined in the mountains near by and is blasted out in large lumps and carried from the top of the mountain by an aerial tramway to the pulverizer. The company has opened several veins of sand almost pure white in color and other deposits which are amber in color. This sand is also carried by aerial tramways, in buckets holding 1,750 lbs. each, to the bins holding about ten carloads of sand or about 800,000 lbs. each, where it is stored after having been pulverized and screened in an American pulverizer, with a capacity of 20 tons.

The power plant contains one engine and one boiler. The plant is operated about nine months of the year and the product is brick in a variety of attractive colors, including ivory white, light red and gray. The white brick are used largely for lining corridors, stairways, etc., and are especially useful for light courts.

The works were established in 1904, since which time many improvements have been added. Several improvements are in prospect, including a stone crusher. Thirty men are employed at the plant and the daily capacity is 19,500 brick.

The officers of the company are J. Hood Smith, president, J. P. Conway, vice president and J. Harry Allen, secretary and treasurer.

A number of attractive buildings have been erected throughout Kentucky with the product of this plant.

SAND LIME FIGURES.

People who are skeptical as to the success of sand lime brick as a building material can best be answered by saying that the conservative German government has put its stamp of approval on the sand lime brick and is using it in construction work.

To compare the sand lime brick with natural sandstones the following table taken from the Geological Survey of Ohio will be of interest:

	Natural Sandstones	Sand Brick
Weight per cubic foot.....	137 lb.....	136 lb
Absorption	7.3 %.....	8. %
Crushing strength	6,535 lb.....	7,745 lb
Coefficient elasticity	165,440	600,000

The fact that freezing causes an increase in the strength of this product is shown by the tests made by the Pittsburgh testing laboratory, in which the crushing strength per square inch was increased from 3,518 pounds to 4,137 pounds after freezing. The success of the sand lime brick depends upon the quality of materials put into them more than the particular method in manufacturing. Clay in the sand is one of the detrimental materials to be guarded against. An addition of a small amount of clay causes a marked decrease in both crushing and tensile strength. —W. L. Anderson, in May "Aurum."

SAND LIME BRICK.

The Pacific Builder and Engineer has to say the following in regard to sand lime: "The manufacture of sand-lime brick has assumed large proportions in the last few years, and the great improvement effected in the process of manufacturing amply justifies the adoption of this building material in the United States.

From 1897 to 1902 there were eighty plants established in Germany, and there are now reported 280 plants making these brick. In 1902 the German Reichstag purchased nine million of these brick for army buildings and made a saving of about \$20,000.

The elementary facts in the brick business are that clay does not exist everywhere, whereas sand is of general distribution and may be worked at less expense. The processes of manufacture are numerous, and some are protected by patents. The various processes are dis-



The Plant of the Winchester Granite Brick Co.

tinguished from each other by the method of treating the lime; the pure hydrate, the mixed and the quicklime processes cover the different methods.

The tests made on sand-lime brick show it to have the tenacity required in brick of good quality. The greater symmetry claimed for this brick in shape and structure is given as the reason why the product shows comparatively small deviation from the average. The tests proved the brick to be frostproof and as possessing good fire-resisting properties and acting well under water when hot.

Because of their regular form and uniform dimensions they are readily laid, and their trim appearance creates a demand for them as facing stones.

There are more than a hundred sand-lime brick plants in the United States, mostly in the eastern section. There was one started in Washington about two years ago, but it was destroyed by fire and is now in process of rehabilitation.

MAKES MANTEL BRICK.

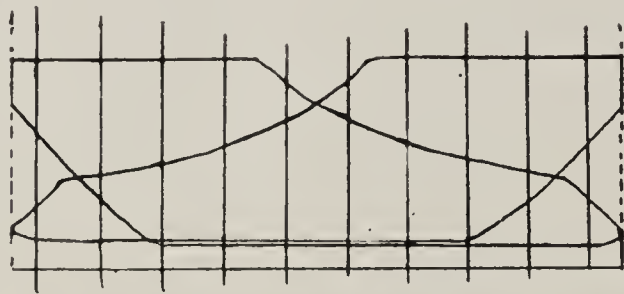
The Missoula (Mont.) Brick & Tile Co. recently furnished brick for a mantel in a fine home at Spokane, Wash.

TWENTY-SIX PER CENT OVERLOAD.

A very interesting demonstration of the high quality of the famous Frost engine is shown by the accompanying copy of an indicator card taken by W. F. Davis, a mechanical engineer of Kansas City.

The engine from which this card was taken is in active operation at the present time, and the card was made recently. The engine is a regular 12-inch by 12-inch Frost, of 165 R. P. M., with 40 lbs. mean effective pressure, rating as sold by the company at 60 h. p.

The indicator card speaks for itself and shows that this Frost engine was in active operation carrying an overload of 16 h. p. or 26 per cent.



INDICATOR DIAGRAM

Card No 2	Rev Per Min 165
Taken 1-3-05	Scale 60
By W.F. Davis	Piston Dia 12"
Kansas City, Mo.	Piston Stroke 16"
Eng No 5289 (F.M. Co.)	Piston Speed 195'
	Piston Area 113"
Pres (Max) In Cyl 92	Eng Constant
Back Pressure 115"	MEP 50.5"
	IHP 76.08
Back Pres. equal in Horse Power 17.3	
Steam Used Equal To 93.38 HP.	
Note Card Taken With Engine Exhausting Into A Heating System	

The Frost automatic side crank engine has become very popular in the clay industry and is in use on hundreds of yards throughout the country. It is particularly suitable for yards requiring from 25 to 150 h. p., and is especially adapted for the conditions existing in clayworking plants.

RECENT TRADE PUBLICATIONS.

"Progress" for June contains a most interesting article on San Francisco, the Phoenix City, with descriptions of the handsome new buildings which have arisen to take the place of the ones destroyed by the earthquake. Another interesting article describes "An Artistic Home of Hollow Tile."

The "Publicity Magazine" published by the Under-Feed Stoker Co. contains some useful information in reference to the cost of fuel, waste by smoke and other information along the lines of fuel economy.

"Progress in Brick Drying" is a little booklet issued by the C. W. Raymond Co. of Dayton, O., giving some valuable information in regard to brick drying from the earliest days, when the first brick maker used the open-air radiation system, down to the present time, with its many modern methods.

The Acorn Brick & Tile Co. has commenced the construction of its plant at Glenville, Minn.

NEW CALIFORNIA PLANT.

A new silica brick factory has been erected near Ben Ali, California, on the main line of the Southern Pacific railway. The lands comprise a tract of thirty-nine acres of fine clay land on which the plant is situated. The main building is three stories high and is well equipped for the manufacture of pressed and fire brick, fireproofing, sewer pipe, conduits and other clay products. Reports from California are that the use of clay products is increasing there by leaps and bounds and the demand is great for all lines of these materials. The foothills of the Sierra Nevada mountains are said to be rich in deposits of fine clay.

FLEXIBLE REVERSIBLE BOXING.

The Chase Foundry & Mfg. Co., of Columbus, O., manufacturers of all kinds of trucks, cars, etc., have recently produced sectional views of their patented flexible reversible boxing, cuts of which are herewith shown.

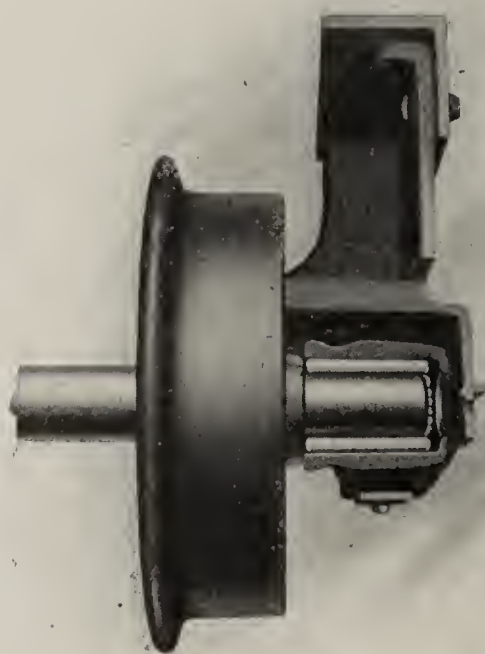
The boxings are so arranged that they adjust themselves to any unevenness in the track or wind or strain in the car, without any increased friction on the bearing.

If the boxings become worn after long service they can be reversed, giving an entirely new wearing point, thus doubling the life of the wearing parts of the car.

The brackets which support the boxings are of extra strong design and are hooded both inside and outside, protecting the bearings from sand and other foreign substances.

Another important feature in the construction is the manner in which the brackets and boxings are assembled. The boxings are held in position by trunnions, which are a part of the boxing and which rest in pockets formed in the brackets, allowing the boxing to both vibrate and oscillate, avoiding increased stress or strain on the bearing under any circumstances.

One complete set of wheels and axles, consisting of four wheels and two axles, can be removed by removing four bolts, without disturbing the bracket or other parts of the car in any way.



Sectional View of Flexible Reversible Boxing, Made by the Chase Foundry Co.

The Chase Foundry & Mfg. Co. advise us that they are also using this construction on many of their industrial cars for general purposes. Further information may be obtained by writing the Chase Foundry & Mfg. Co. at Columbus, O.

STANDARD'S NEW PLANT.

We are pleased to show in the accompanying illustration the magnificent new works of the Standard Dry Kiln Co., located at Harding and McCarty Streets, Indianapolis, on the Belt Railroad.

Growth is a certain evidence of progress, and the Standard Dry Kiln Co. has proven both its progress and progressiveness through the erection of this fine building and the extensive enlargement thereby of its facilities.

Not only has the company placed itself in a position to turn out a larger production of Standard driers, but it has through the erection of the new plant secured such arrangements for the economical handling of its work as to largely reduce the cost of production. All of the manufacturing equipment is on one floor and the machinery

MORTAR COLORS.

Almost all of the many varieties of materials employed during the erection of a building, may be thoroughly tested in advance before being incorporated into the structure, so that the contractor knows he may safely buy from almost any source, trusting to his tests to tell whether the material is good or not. The only preliminary tests that could be applied to mortar colors, however, would be those involving a chemical laboratory which, of course, in most instances, is highly impracticable.

A poor mortar color may appear absolutely satisfactory until after it is put up and then of course, mistakes cannot be remedied. Fading by the sun, changing color under the chemical action of gases in the air, or worse still, spreading and washing out with every rainstorm—these are the things the builder fears. The only safe way to



Extensive New Works of the Standard Dry Kiln Co., Indianapolis, Ind.

is all electrically driven. This explains the absence of the customary smokestack in the picture of the new building.

The more economical methods of manufacture will enable the Standard Company to give a price advantage to its customers and to turn out orders more quickly.

The subject of steam driers is one of much interest to clay-products manufacturers. The claims for superiority for the steam drier are many, not the least of which is cleanliness and the more uniform results secured through its use. The Standard Dry Kiln Co. produces a steam drier which has proved very popular throughout the clay industry.

From Wickliffe, Ky., comes the information that the directors of the Clay Products Co. met in the court house at Louisville, Ky., recently and elected J. C. Lysatt, a well known ceramic expert of New Jersey, superintendent and general manager of the plant for the ensuing year. The company has a capital stock of \$100,000 and the plant will be located at Wickliffe, Ky. Erectors have been engaged and the construction of the new plant is progressing in a satisfactory manner.

purchase mortar colors is to stick to a well known brand like Ricketson's, where the reputation of the product takes the place of preliminary tests. The special process by which Ricketson's "Red Brick" brand mortar colors are made, renders them absolutely stable under the most trying conditions. Every barrel of these colors is said to be as good as an insurance policy against mortar color troubles of any sort.

WORKING OVERTIME.

James Rainey, of the Means Engineering and Foundry Co., has been setting up a big press at the Union Clay Manufacturing Co.'s plant at Empire, O. This factory has been working extra time in order to stock up, running three nights a week. A fine quality of clay products are being manufactured, small pipe have been the principal production but with installation of the new presses the larger sizes of pipe will be rapidly added to the stock.

John Spencer, of near Pittsburg, purchased the Fredericksburg (O.) Pottery Co. at receiver's sale. The price paid was about \$5,400. The company will be reorganized.



Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers— Market Fluctuations and Industrial Prospects

SPARKS FROM THE WIRE.

The Riverside Brick Co., a Hattiesburg, La., concern, is making extensive improvements, which will enable them to double their output. A brick office building is also being erected.

There is known to be a fine clay deposit on the farm of U. L. Burdick, Williston, N. Dak. Plans are on foot for the establishment of a brick plant there.

Warren Overpack and F. J. Gary of Medicine Hat, Alberta, Canada, have secured an option on the plant of the Red Wing, (Minn.), Stoneware Co. It is said they intend to remodel the plant for the manufacture of vitrified sewer pipe. The company will be incorporated under the name of the Marshalltown Vitrified Sewer Pipe & Tile Co., with a capital of \$300,000. Contracts have already been let for \$25,000 worth of machinery and it is expected the plant will begin operations in ninety days, employing about fifty men.

The plant of the Arkansas Brick & Mfg. Co., located near Little Rock was almost totally destroyed by fire, causing a loss estimated to be \$100,000. It is said that about \$70,000 worth of insurance is carried on the plant. As the company had on hand about 4,000,000 finished brick, it is thought this will be sufficient to meet the demand until the new machinery can be installed and the work in the plant resumed.

It is said a vein of fine clay about 8 ft. thick has been discovered at Sullivan, Ind., which will probably result in the erection of a plant there to use the clay.

The Drake Marble and Tile Co. of St. Paul, Minn., and Chicago, Ill., has been organized with a capital stock of \$50,000.

The Unit Brick & Tile Co., at Belleville, N. J., has been incorporated with a capital stock of \$45,000 for the manufacture of brick and tile. The incorporators are F. M. Dyer of Closter, H. C. Lowe of Brooklyn, N. Y. and W. A. Sweet.

Two buildings of the Philadelphia & Boston Face Brick Co., were destroyed by fire at Charleston, Mass., causing a loss of about \$2,500.

The Business Men's Association of Elwood City, Pa., have taken an option on a shale bank near the city, with a view of locating a large brick plant on it ere long. No details are announced.

Fire destroyed the frame buildings of the Hancock Shale & Brick Co., at Hagerstown, Md., the owners of which are J. T. and F. Wilbur Bridges. The loss is estimated at about \$7,000. The plant had a capacity of 18,000 per day, and orders were on file to keep the property active throughout the summer.

Information has been received that John Bern of Missoula, Mont., will start a brick plant at Deer Lodge, Mont.

The P. H. Fairlamb Co., has been formed and will erect a new brick plant in the vicinity of Bordentown, N. J. The capital stock is placed at \$100,000.

The formation of the New Jersey Unit Brick & Tile Co., of Belleville, N. J., has been completed by F. M. Dyer of Closter, N. J. The capital stock is placed at \$45,000.

The purchase of the Miller Brick Co., at Beaver Falls, Pa., is pending. It is reported that, if the deal is made, the plant will be converted into a roofing tile manufacturing works. Local business men are reported back of the new deal.

The Kloess Brick Co. of Belleville, Ill., has been dissolved.

The Doyle Brick Co., has been formed at Utica, N. Y., with \$25,000 capital stock. C. P. Kimball of Utica, N. Y., is at the head of the new company.

The Cary Brick Co., whose brick plant is opposite Cox-sackie, N. Y., was partially destroyed by fire, entailing a loss of \$20,000. They will rebuild as soon as the loss has been adjusted.

The vitrified brick plant at Albion, Ill., has fallen into new hands and plans have been prepared for improvements, which will make it worth \$200,000.

The Moberly Paving Brick Co. has been organized with a capital of \$300,000, of which \$150,000 is authorized to be used in business at Moberly, Mo.

Stockholders of the big \$250,000 Clay Products Co., at Webster City, Ia., are formulating plans for the erection of an immense plant at Lawn Hill, a suburb of that city.

The Ottawa (O.) Tile Co. has been organized with a capital of \$20,000 by A. H., F. H., B. M., W. A. and J. C. Wehinger.

The Hobson Brick & Building Co. is the title of a company organized at Norfolk, W. Va., by F. W. Leggett and others.

The Phoenix Ceramic Works has been incorporated at Perth Amboy, N. J., with a capital of \$400,000 for the manufacture of clay products.

The Catskill, N. Y., Board of Trade is considering a proposition of a well known brick manufacturer to purchase the plant of the Catskill Vitrified Brick Co., provided the Board of Trade will protect the company from any trouble arising on account of alleged smoke nuisance.

The Variety Works Co., of Dawson, Ga., wants catalogs and prices on tiling for mantels.

It is reported that the George D. Jenkins Brick Co., of Mt. Holly, N. C., will establish a brick plant there, with a daily capacity of 50,000.

The plant of the Jamestown (N. Y.) Shale Paving Brick Co. was almost totally destroyed by fire, caused by lightning. The loss amounted to about \$60,000 with insurance \$25,000. The firm deplores the fire doubly at this time, as orders were booked to keep the plant busy until December.

The American Clay Pipe Co. has been organized, at Queensboro, N. Y., with a capital of \$30,000 for the manufacture of clay pipes, etc. The incorporators are W. Scharder, Brooklyn; W. Ehlers and O. M. Erk, of Hoboken, N. J.

The Canton (O.) Pressed Brick Co. has increased its capital from \$32,000 to \$200,000.

The plant of the Edwards Vitrified Brick & Sewer Pipe Co., at Albion, Ill., was sold under the hammer to Geo. Zeigler, of Carmi, for \$6,997.

THE CITY OF BROTHERLY LOVE.

Philadelphia, Pa., June 23.—The present year, while it could be much worse, has not been showing a strong demand for the various clay product lines of trade. Business has really been more quiet in these lines than for several years. Real estate men are not operating as heavily, builders are not speculating and are building only what they can readily sell, the banks have plenty of money but there is not the usual demand for it, investors are moving cautiously and do no plunging. There is a fair, healthy movement, however, and always will be of brick, terra cotta, sewer pipe, pottery, etc.

The suburbs are building up strong and no other city in America has finer homes than this city, and most of

them are of brick. It is nothing for one firm at times to build from 100 to 300 or even 500 houses, and some of these operators have their own brick plant and lumber yards. The parts of the city known as Frankford, Germantown, West Philadelphia, the South Side and many other such sections are being rapidly built up of separate houses, with a garden and porch front. There are few tenements here and not many apartment houses; most of the houses are two stories in height, but there are blocks and blocks of houses built in a row, all alike, built by one operator.

This is considered the largest manufacturing city in the country and products of the mills here reach every country in the world. In brick the output is large in this city. There are 350,000 buildings here; of these 325,000 are houses, and the area of the city is 130 square miles. There are a larger proportion of homes owned by the laboring men here than in most other American cities, and an average of 2,000 houses a year have been built for the past 167 years. The first brick house built here was that owned by William Penn on Letitia street, and was moved some time ago to Fairmount Park, where it is used as a museum. There are 16,000 separate manufacturing plants here, making 300 distinct lines, with an annual product of \$700,000,000.

Common building brick has been quiet and the plants will not make as many improvements as usual this year. Salmon is selling for \$5.50 and straight hard at \$7.75.

This is a great city for iron spot brick and a great deal of this kind is sold, also the "tapestry effect" brick has had a very large sale during the past few years. Fire brick has had a moderate sale, pottery lines moving fairly well, terra cotta has been dull, and there has been some cutting in price; sewer pipe has had only a fair demand.

There has been considerable paving brick sold here, as well as flue linings and special work for the coke ovens and steel plants. Red stretchers and black headers are selling at \$14; face and pressed brick, \$18-\$23; slate, \$3.75 to \$7; tapestry brick, \$20-\$25. Fire brick, terra cotta and sewer pipe same as usual. The rough face brick is becoming more popular here each year and has had a fair sale at all times.

The Merchants' and Manufacturers' Association of Philadelphia started their third commercial invasion of the Pennsylvania towns recently and have done good work on each of the trade expansion trips. This benefits every branch of the clay products lines as well as other trade lines.

The Canadian Pacific Railway in connection with the Western Canada cities have had an industrial exhibit at 612 Chestnut St., this city. They had on exhibition brick made in British Columbia, burned with natural gas, also all kinds of clays were shown.

Shellenberger & Smith, of the Builders' Exchange, report the brick business generally dull.

A. S. Reid & Co., dealers in building brick, of Newark, N. J., have moved their offices to 1501-1502 Firemen's Insurance building. They have a good display of front, enameled and paving brick.

The Mantello Brick Co., of Reading, Pa., had a fire recently at their plant, but is doing business just the same.

H. O. Duer, of Wilmington, Del., who a year ago succeeded the Wawasett Stone Co., of that city, also has a brick plant. No brick are being made, the plant and machinery are idle and Mr. Duer is furnishing limestone for building purposes.

Alpine Lucas, late with O. W. Ketchum as salesman, has opened a selling agency for the United Brick & Clay Products Co., Room 310 Morris building. The plant is located in Center County, where they make fire brick.

Plainfield, N. J., may get the plant of the North Hudson Brick Co., of Newburg, N. Y.

The Darlington Brick & Mining Co., of Darlington, Erie County, Pa., have established an exhibit and sales office here at 1002 Crozer building, in charge of C. W. Searight, assisted by A. S. Baird. They are showing face and tapestry effect brick, smooth and rough, as well as roofing tile, fire proofing, flue lining, etc. The brick in the exhibit are laid in natural mortar, showing various sized joints, showing many effects in the arrangement.

The Builders' Exchange recently gave a dinner at Mor-

ris Junction, well attended by the representatives of the clay-working industries.

The Lock Four Brick Co. is a new concern to operate at Charleroi, Pa.

R. B. Seidel, of Vine St., maker of crucibles, says the demand is light for these lines.

The Philadelphia Fire Brick Co. say that they are working full time, but business is only fair. A moderate year's business will be the result. The average is up to other years as a rule. The iron and steel trade is dull and that affects conditions in the fire brick line.

A company is being organized at Sharon, Pa., in connection with F. R. Kanengeiser, of Youngstown, O., to operate the J. V. Rose fire brick plant in Brookfield, O., and they will make vitrified shale paving block.

M. E. Geiger, who is selling agent for the Silicate Brick Co., of New York, has moved from the Builders' Exchange to 724 Lafayette building.

G. E. Pauck and A. Volts will operate the Lambertville (N. J.) Pottery Co.

The Philadelphia Terra Cotta Co., of 620 Arch St., says that the demand is quiet now, lots of work is contemplated, but no one knows when it will go ahead. Its plant is at Spring Mills, Pa. The manufacturers met at New York and adopted trade selling prices, but some are not adhering to it and it is causing loss and confusion.

The Auburn Shale Brick Co., of Gettysburg, Pa., has put in a system of drying by waste heat, and has enlarged its plant to a capacity of 735,000 brick daily, and made other improvements.

THE BUCKEYE STATE.

Columbus, O., June 22.—The Sharon Fire Brick Co. has sold 55 acres of its holdings near Warren, O., to W. G. Green for a consideration said to be \$4,500.

Recent improvements at the plant of the Warren (O.) Brick & Tile Co. include the installing of an automatic stoker of the Vulcan Furnace Co.'s creation.

The plant of the Auglaize Tile Co., at Wapakoneta, O., is now running full time, with a complete force of workmen.

The Pittsburgh Clay Products Co., with offices in the Keenan Building, Pittsburgh, Pa., and the Central Sewer Pipe Co., have entered actions in common pleas court at Lisbon, O., against John Deemer, president of the Champion Brick Co., of Wellsville, of which Thomas H. Silver, Sr., held the majority of stock, to require the delivery of certain orders of brick.

The former company claims it ordered 262,000 model face brick and the latter corporation claims to have unfilled orders aggregating 187,140 building brick. The corporations assert the brick is being wrongfully withheld from them, and the court is asked for a judgment, which will compel the Champion Brick Co. to make deliveries.

President Deemer, of the brick company, recently filed a motion in the same court here asking that a receiver be appointed for the brick company, and George A. Frink, of Wellsville, was given this office. The plant is idle since the failure of the Silver Banking Company, of Wellsville, O.

The contract for the furnishing of the brick for the new school buildings to be erected at Youngstown, O., have been let by the Board of Education of that city to the Youngstown Ice Co., and the Mahoning Brick Co. Deliveries are to be started immediately.

The Ashtabula (O.) Shale Brick Co., which was recently organized by Ashtabula and Conneaut men, has increased the capital stock of the corporation to \$55,000. The erection of the new plant near Ashtabula will be undertaken at an early date.

Building in Columbus and the immediate vicinity has been held up this season because of a shortage in common building brick. The situation has been acute, and owing to higher freight rates on "common" brick, effective under a readjustment of March 1, few were shipped in from outside. There was no shortage except in brick such as is used for "filling" or on the back and sides of buildings, and most of the construction delayed was of dwellings. Seven or more local firms made "common" brick.

"About 30,000,000 'common' brick are used annually in Columbus," said Warren B. Ferris, a local manufacturer. "The supply carried over last winter was small. Building began early and the supply ran out. Rains prevented manufacturers from making more. The shortage still exists and will likely prevail for 10 days longer. Prices stand about where they did last summer, \$6.75 per 1,000. Few have been shipped in on account of hauling and transportation, which would cost \$1 or more per 1,000. Probably only 7,000,000 or 8,000,000 'common' brick have been furnished by the local yards this year."

Leroy W. Gaddis of the Gaddis-Harrison Brick Co., which does not handle "common" brick, said: "Little outside brick has been shipped in because the freight rate on 'common' brick was raised 50c per 1,000 about March 1. I understand that there is plenty of 'common' brick in local yards now."

"Business in May is about on a par with last May. April fell off considerably, but during the first three months of 1911 this company made excellent sales. This seems to correspond with general building conditions."

The mammoth brick plant of the Hocking Valley Products Co., which is located near Nelsonville, O., on the Hocking Valley Railroad, after having been completely remodeled, resumed operations early this month under the general management of Daniel E. Regan, formerly of Terre Haute, Ind. The plant has a capacity of 150,000 brick per diem. The company is a complete reorganization of the Columbus & Hocking Coal & Iron Co., a matter that has been in progress of formation for several months.

Kachelmacher will hereafter resume its old name, Greendale, instead of the name of the former president of the company. The government will be asked to open a postoffice called Greendale, and the Hocking railroad has agreed to build a station with brick furnished from the plant. Several new houses for workmen are being built.

THE KEYSTONE STATE.

Pittsburgh, Pa., June 27.—While it is admitted that the brick manufacturers in the Western Pennsylvania district have been doing a very satisfactory business so far this season, the fact nevertheless remains that the bulk of the brick being sold is for building purposes outside of the city limits of Pittsburgh. Suburban building is very extensive and it is believed that it will reach far into the fall. The brick plants, especially the building brick manufacturers, are reasonably busy throughout the state.

Refractory brick and refractory material manufacturers are not as busy as they might be, for the reason that the majority of the iron and steel plants are not running on full time. However, in these lines, there is a gradual although slow improvement, all of which is of a healthful character.

Hereafter, bricklayers at Scranton, Pa., will receive 55 cts. per hour. The new scale was agreed upon at a meeting between the representatives of the bricklayers and the brick contractors.

Stock in the National Fireproofing Co., during the last fortnight reached the highest price of the year. The company is booking some very satisfactory business, according to officials.

Building conditions in Pittsburgh are extremely quiet, but they are expected to improve in the near future, so far as the National Fireproofing Co. is concerned. One of the last acts of the city council was to pass an ordinance specifying how terra cotta hollow tile should be used in building construction, as it applies to small structures. Strange as it may appear, while builders of skyscrapers were allowed to use it in general fireproof construction, the building laws were such that it could not be used in the ordinary dwelling for outside wall purposes, owing to the fact that the ordinance did not so specify. While the law as framed is said to be not entirely satisfactory yet it now permits the use of the material in general building construction, thus enabling persons to construct even the smallest structure absolutely fireproof. The company is booking a good volume of trade in New York.

Edward Snyder, Jr., has assumed charge of the brick yard at Hanover, Pa., which was formerly owned by Edward H. Snyder, his father. The plant is working steady.

Agents have been advised of the following quotations which, at this writing, are prevailing in the eastern markets:

Front, buffs, No. 1.....	28.00@30.00
Grays, shaded and speckled.....	32.00@.....
White, No. 1	32.00@.....
Hudson River, common	5.75@ 6.00
Light, hard	4.50@ 4.75
Pale	3.50@ 3.75
No. 1, fire, American	25.00@.....
No. 2, fire, American ...	20.00@.....
Scotch	35.00@.....

A new stone crushing plant has been installed at the brick works of the C. E. Miller Brick Co., at York, Pa. Building activity in the vicinity of York was never better than now, with the result that all yards are being favored with some heavy business.

According to word received by the trade here, a certificate of dissolution has been filed by the Roanoke Pressed Brick Co., at Webster, Va.

Construction has been started on a new brick plant at Meredith, near Reynoldsville, Pa., the formation of the company being mentioned in "Brick & Clay Record" several months ago.

Extensive sewer construction work is under way at Moundsville, W. Va., and all the pipe is being bought from plants in the vicinity of Empire, O. B. F. Sweeten & Son have the contracts.

Receivers of the plant of the Lincoln Fire Brick & Shape Co., at Bolivar, Pa., will, it is reported, dispose of the plant to a new corporation which will operate the property.

The capacity of the Champlain Brick Co., at Troy, N. Y., has been doubled by the installation of an additional machine. This will give the firm a production of 86,400 bricks per diem. During the week ending May 20th the company shipped 45 cars, making a total shipment of 1,500,000 brick within a fortnight.

Geore S. Norbeck, of Lancaster, Pa., has been made sales-manager for the Mountville Brick Co. He has opened an office in Lancaster, where a complete line is being shown.

H. M. Houlette & Son, of Beaver, Pa., have been awarded a contract for the construction of a number of kilns for a brick concern at Birmingham, Ala.

Construction is progressing favorably upon the new brick plant which is being erected by the West Virginia Clay Products Co., of Charleston, W. Va., on the Elk River near "Two Mile" station.

With a capital stock of \$5,000,000 the One Hundred Percent Brick Co. has been formed at Wilmington, Delaware, by G. G. Stiegler, G. D. Hopkins and G. W. Dillman, all of Wilmington. Details concerning the intent of this new corporation are at this time lacking.

Work is being rushed upon the construction of the new buildings of the Glass Brick Co., at Connellsville, Pa. The plant was destroyed by fire about two months ago, mention of which was made in these columns. Enough orders are on hand to continue active operation as soon as the buildings are completed.

A financial newspaper recently contained this item of information under a Ft. Worth, Texas, address: "The Thurber Brick Co., owned by the Texas & Pacific Coal Co., resumed operations after a shutdown since May 1. This is the only union brickyard in Texas, and is making hardly, if any, money, and three points under controversy were conceded by the union."

Because Schuylkill County brick was barred in the construction of the new \$500,000 county insane asylum at Pottsville, Pa., the county court was asked to interfere. Judge Shay, before whom the matter was brought, declared there was no legal grounds for interference, and the contract was therefore allowed to remain with a brick concern at Hummelstown, Pa. The New York architects objected to the "tint" of the Schuylkill brick, so it is said.

THE TWIN CITIES AND THE NORTHWEST.

Minneapolis, Minn., June 25.—The brick trade so far this season has not been quite as active as could have been hoped for. Although there has been a reasonable

volume of new building, it has been scattered widely among the different classes of material, and the share awarded to brick was not as large as expected. There is every indication that the latter part of the summer and the fall will see a larger building volume, for a great many buildings are waiting the outcome of the crop, for which the prospect is excellent. The good work which has been done by the Building Brick Association and the Northwestern Clay Association and other organizations has awakened an interest in brick construction, which may be counted upon to help, although the publicity campaign must be kept up if the work is to be made effective, for the public forgets very quickly.

In the Twin Cities, construction has been fairly liberal, but the larger jobs run largely to reinforced concrete construction. They give a little market for face brick, usually against hollow tile backing, but far less than with other forms of construction. In Minneapolis, building totals for five months are just slightly in excess of the total for the same months of last year, which is a very good showing for the last year totals were very good. St. Paul building totals so far are not quite as heavy as a year ago, but there are a number of larger jobs in view which will bring them up.

The strike of carpenters in the Twin Cities is still on, and the general contractors are all standing pat, with three exceptions, two of whom yielded immediately upon the demand, for special reasons, it is understood. The strike has affected construction very little, for the contractors have been able to get non-union men. But there has been a deferring of a number of jobs, including some with brick walls, because of fear of trouble from the strike.

The Builders' Exchange of Minneapolis has arranged for its annual picnic for Saturday afternoon, June 24, at Lake Minnetonka. E. H. Cobb, of the Hydraulic-Press Brick Co., is a member of the committee on arrangements. A number of the party will make the trip to the lake by automobiles, and it is expected to have about twenty automobiles in line for the trip. Chartered trolley cars will convey the remainder to the lake.

The Barr Clay Products Co., of Wanamingo, Minn., has been formed to exploit a new clay bank there which was recently found by Ed. Barr, a well known clay man of Austin, Minn. The new bank is a shale deposit which is claimed to be suitable for hard burned brick, face brick, tile, etc., as well as building block. A large plant is projected and it is to be installed as soon as possible. Charles O. Roe is president; Edward Barr, vice-president and manager; H. S. Swan, treasurer, and W. S. L. Davidson, secretary and sales-manager.

The brick companies at Luverne, Minn., have made complaint to the state railroad and warehouse commission asking that the Great Northern and the Omaha Ry. be compelled to install a wye.

Ernest H. Sellhorn, of Princeton, Minn., of the brick manufacturing firm, Woodcock & Sellhorn, was a recent visitor in the Twin Cities.

The North American Brick & Tile Co. has its new plant at Walsh, near Tower, Minn., in the extreme northern part of the state, about ready to operate. The plant is a large one and a new town is being established there.

H. Madsen, Hutchinson, Minn., has made additions to his plant, including an electric motor and other equipment.

Ole O. Grue, a well known general contractor of Mankato, Minn., died recently, of Bright's disease. Mr. Grue was junior member of the firm of J. B. Nelson & Co., of Mankato, who have built a large number of good brick structures through southern Minnesota, especially banks and school buildings and some of the state buildings at different state institutions.

The Schroeder Brick Manufacturing Co., of Shakopee, Minn., has recently started operations for the season, after having installed some new machinery. This includes a brickmaking machine with a capacity of 45,000 brick per day.

The Black Hawk Clay Manufacturing Co., of Sears, Ill., has taken a large number of orders for supplying its product for some of the more conspicuous jobs of new work through the Northwest. The orders include new

brick structures in Wisconsin, Minnesota and Iowa. The Minneapolis office has been very energetic in pushing the sale of the goods.

The city of Minneapolis will lay about \$600,000 worth of paving this year, and of this total, brick receives next to the smallest portion of any material, having about \$32,000 worth ordered. Creosoted blocks are favored in Minneapolis, and will include \$390,000 or about 65 per cent of the whole, while the remainder is distributed among macadam, \$65,000; granite, \$10,000; sandstone, \$39,000.

Several fires which have occurred in the Twin Cities, have shown that even mill construction can be materially benefited if the openings are properly protected by tile or brick partitions. A fire in a five-story structure in Minneapolis caused a loss \$100,000, but the building was not damaged to 50 per cent of its value, and so under the ordinance, could be repaired. But in repairing it, the elevator enclosures and stairways were enclosed in tile walls and wired glass, making it that much more secure against fire. The excessive fire losses in Minneapolis, especially, should make it an easy matter to sell tile for enclosing stairways, for the insurance men will certainly urge the protection of openings by such construction.

The Fairmont Drain Tile & Brick Co., of Fairmont, Minn., has just completed the burning of its first kiln of drain tile for this season.

Manager Skjeltbred has started operations for the season at the plant of Washburn Brick Co., Washburn, Wis.

Smith & Hales have begun operations at their brickyard at Grey Eagle, Minn., for the season.

LONE STAR STATE.

Austin, Texas, June 27.—Good crop prospects over the state are stimulating all lines of building trades. An unusual number of large business and factory buildings are now in course of erection in the several larger cities as well as in a number of towns of smaller population. It is noticeable that the character of architecture as well as the type of construction of these buildings is modern in every respect. The demand for brick is very satisfactory for this period of the year. Dealers usually expect that the midsummer dullness will lessen building operations, and of course to some extent this is true in Texas now, but conditions, everything considered, are better than could be expected.

In the matter of municipal improvements such as street paving there are good prospects for a great deal to be done along this line in the fall. Some of the cities and towns are already making important improvements and there is a brisk demand for pavers. One of the recent of the larger contracts that was let for this character of street paving was that of the city council of Temple, Texas, for ten blocks of residence streets. This contract went to Ockander Bros. of Waco.

Of the several new brick and tile plants that have been established within the last few months in different parts of Texas that of the Gulf Coast Brick & Tile Co., at Brownsville, is said to be one of the most complete of its kind in South Texas. The company owns a large deposit of clay that has been thoroughly tested and proved to be of excellent quality for the manufacture of both brick and tile. This deposit covers 70 acres and has an average depth of 25 to 40 feet. The plant of the company is equipped with a five mold dry Grath patent special press, together with a 100-h. p. boiler and an 85-h. p. engine, as well as a powerful pulverizing machine. The plant has a capacity of 30,000 brick per day of ten hours. Preparations are being made to erect three more 60,000 down-draft kilns. A large amount of tile making machinery is being installed and in a short time the plant will be turning out tile in considerable quantity. Since the drainage agitation was started in South Texas the demand for tile has greatly increased. C. W. Winstead is president and general manager of the company.

S. Robbins, of Winnsboro, Texas., will install a pottery plant at Greenville, Texas. He has already secured a site for the proposed industry and will begin the construction work very soon. Mr. Robbins is a practical pottery manufacturer, having a plant now at Winnsboro.

The Harlingen Brick works which are owned by Lon

C. Hill situated at the new town of Harlingen, Texas, were recently enlarged and are now being still further improved by the installation of oil burners. The company has a great many orders on hand.

NEW ENGLAND NOTES.

New Britain, Conn., June 28.—A record of the building permits in Connecticut shows substantial improvement, both in number of permits and cost of buildings. There seems to be a large amount of work in the architects' offices and as the season advances the outlook is becoming brighter. Brick will be used in the bulk of the new construction.

The Peck, Stowe & Wilcox Co. will build a large factory in Southington, Conn., where between \$200,000 and \$300,000 will be expended; this concern also has a large plant located in Cleveland, Ohio.

The price of common brick, in Connecticut, continues low. The price is \$5.50 on cars at yards, but contractors are able to get concessions, as the immediate demand is small. Prices on hollow brick are \$7.00 at yards, with a fair demand.

The Stiles & Reynolds Co., at Berlin, Conn., is making extensive improvements at its plant. A "New Vertical" New Haven machine and 75 h. p. Wagner motor are being installed; this makes three motors which this concern has installed during the past year and a half. The motors are made by the Wagner Electric Co., of St. Louis, Mo.

The Stiels & Hart Brick Co., of Taunton, Mass., is running its plant to its full capacity and are using three electric motors for power with great success.

The Providence, R. I., market is dull with prices low. Connecticut brick are coming in and the brick manufacturers in this section are waiting for prices to improve.

The New England Steam Brick Co., whose yards are at Barrington, R. I., reports a good demand for its "Barrington" pavers.

Manufacturers of the Harvard or water struck brick report they have sold out their 1910 product and are rushing their kilns of new brick to keep up with the orders.

V. M. Palmer, of New Britain, Conn., who has been prominent in the brick business throughout New England for the past twelve years, has located in Texas, near Brownsville, where he will engage extensively in farming.

Hotchkiss Bros. Co., of Torrington, Conn., owners of the Berlin Brick Co., and large purchasers of the entire output of several brick concerns, has increased its capital stock from \$60,000 to \$160,000.

The dissolution of the Phoenix Brick Co., of West Hartford, Conn., and the discharge of its receiver, Virgil M. Palmer, have been ordered by Judge Williams in the Hartford County Superior Court. Holders of common claims are to receive a dividend of 5 per cent.

Reports on the Boston market for brick do not vary much. Business is spoken of still as of very fair proportions in the aggregate. Several sales of quantities between 500,000 and 1,000,000 brick were made during the second half of last month.

It is said the demand for brick for building material at Hartford, Conn., on account of the scarcity of lumber has caused a revival of the brickmaking industry at that place.

As a result of the fire which created such havoc, new ordinances are to be put in force at Bangor, Me., prohibiting the construction of frame buildings in the fire district, which covers a wide area.

The present season promises to be one of great activity in brickmaking at Dover Point, N. H. Elbridge A. Gage recently bought one of the Parle brickyards and is now the owner of three yards.

A recent review of the building activities in Hampden County, Mass., showed that Springfield's new building now amounts to more than \$5,000,000 a year, of which a large fraction represents factory growth, that a factory addition to cost \$400,000 is being built in Chicopee, that three great factory additions are being built or soon will be constructed in Holyoke, and that the brickmakers expect to sell 20,000,000 brick during the coming summer for use in nearby towns.

KANSAS AND THE SOUTH WEST.

Coffeyville, Kan., June 25.—Oklahoma is soon to experience one of the greatest construction periods in recent years, according to reports from the various towns in that state where contracts have been let or are now pending, which promise to keep the brick plants of the surrounding territory running to their full capacity to fill the orders.

In Muskogee, plans have been announced for the construction of a ten story brick office building, work on which will begin at once. Several other brick buildings of from two to six stories are also planned, the work to commence as soon as the contractors can reach them. One of the other buildings is to be built by the Texas Oil Co., and will be used as the headquarters of the company's interests in the state.

Six new brick buildings from two to three stories will soon be built in Vian, Oklahoma, and already there have been fifty cars of brick unloaded there for this construction.

Under the management of W. E. Goff, a brick man from Girard, Kan., the new brick plant at Claremore will soon commence operations, with a daily capacity of from fifty to sixty thousand finished brick. The work of placing the machinery is now going on.

The plant will give employment to about one hundred men and is located one mile south of Claremore on land underlaid with one of the richest shale beds in the state of Oklahoma, and the quality of the goods produced will doubtless be of the best that Oklahoma can produce.

It is the intention of the plant management to make building brick exclusively. A tramway line will be used to haul the product of the plant to the railroads.

THE CHICAGO SITUATION.

Chicago, Ill., June 26.—The after effects of the brick and kindred strikes are being felt here in two ways. The first and most gratifying one is the increased number of orders for clay products. The other is the loss that is bound to accrue from the lack of orders on account of

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the decrease in the number of projects that would otherwise have been planned had the labor trouble not entered into the matter. It is safe to say that, however bad the situation is from the latter viewpoint, the former more than offsets it.

The busiest plants in and about Chicago are the common and building brick concerns. Since the settlement of the strike, now less than a month ago, there has been a rush for brick and the plants have been doing all that was possible to meet these demands. There has been one handicap that has worked against the industry and that has been the unusual weather in this section for some weeks. On account of the heat the deliveries of brick have been much slower. The men cannot accomplish as much as in ordinary weather and the delivery has been retarded on this account. Working in the hot sun with the thermometer about 90 degrees is not the most pleasant thing in the world, as the brick handlers have discovered. Still there has been wonderful progress made and the number of jobs that are now held up on account of a lack of brick is so small as to cut no figure at all.

General reports are more gratifying than they have been in several months. All the operators in clay products are busy and there has been a decided increase in the number of orders in the past few weeks. Despite the fact that there was considerable loss due to holding up work until next year, there has been a very large increase in business for the month of June, and the showing made will be more pleasing than some were inclined to think possible a month ago. There has been a general resumption of business in building construction.

There is still much room for improvement here in the construction of buildings. Loyal as most people of Chicago are to clay products, there has been too much frame construction permitted and the fire losses are larger than they should be on this account. The coming clay products exhibition will demonstrate this in a very forceful way and there should be a campaign undertaken by all those interested in the matter of construction to help along the work of educating the public with respect to the danger and likelihood of serious loss by fire unless buildings are built of fireproof material.

There is still the plumbers' strike that has been holding up some of the work that was begun in the early part of the year, and this is perhaps the most unpleasant feature in connection with the whole industry now. So long as this continues there will be some drawbacks to normal progress and this will indirectly affect the sales in building materials. Everybody will welcome the time when the whole matter will pass into history, as a thing of the past.

The manufacturers and the agents are all feeling much pleased over the improvement in the general aspect of the situation. They look for a continued demand for the rest of the summer and the fall, and will try to recuperate at least a fair portion of the business they should have had in the beginning.

The Thomas Moulding Co. has rearranged its offices and display room. There has been a decided improvement made in the appearance of the whole, and the decorative features of the display room are most noticeable. Mr. Combs stated that there had been a notable increase in the number of orders and inquiries were likewise showing a more healthy tone. Business outside of Chicago had been very gratifying, and the demand for face brick in the city had shown a more healthy tone since the settlement of the strike. There was still an opportunity for improvement, but in view of the fact that there has been a more certain demand there was at least some cause for rejoicing on the company's part.

The Midland Terra Cotta Co., with its new plant now in full operation is pleased with the demand for architectural terra cotta. The settlement of the brick strike has helped it to a more generous demand for the output, and there has been no reason for anything in the nature of a complaint as to the present condition.

The Illinois Brick Co. keeps very active these days. Since the settlement of the strike trouble there has been a hum at the many plants of the company, and the only trouble has been to get deliveries made promptly. Although goods have been going out in a very fair way, the long continued hot weather thus far has been holding things back to some extent. Despite this fact, there has been considerable headway made and the orders are be-

ing filled with great rapidity so that there has been really small cause for complaint.

The Hydraulic Brick Co. have noted an improvement in the demand for face brick in the past few weeks. This has not been as great as it might be, and still there is a decidedly better tone all around to the market. Orders are being filled rapidly, and the demand bids fair to continue until late in the fall.

The Western Clay Products Co. has been only fairly active of late. The strike had a very depressing effect on the business of this company from the fact that it does a local business entirely. Conditions have been improved, of course, but not so much as to bring the demand back to normal.

Thos. Connolly has found the demand for sewer pipe to be very much improved in the past month. The plant has been operated with a day and night force and there has been some difficulty in filling orders as rapidly as they should have been filled. Prices continue about as they have been and there seems to be no likelihood of any material change soon. The sewer pipe situation is much improved in the way of demand at least.

MICHIGAN NEWS.

Detroit, Mich., June 24.—Brick manufacturers in different parts of Detroit and Michigan are operating their plants full, and there is every indication that they will continue so doing through the summer and fall months. Business is coming in much better volume than last year, and all signs point toward a record year, as predicted by manufacturers in this district at the beginning of the present season. Prices are slightly in advance of what they were earlier in the season, and there are manufacturers who are inclined to believe there will be still further advances during the summer.

There is not a plant in the Detroit district that is not running full, and many of them are working overtime and are still unable to meet the demand in proper order. Clay beds are being opened and preparations are being made for more extensive operations next year. There are one or two new companies in Detroit this year, and they are getting as much business as the rest of the producers. The threatened strike of the carpenters and painters has not developed, and building operations are being rushed with all possible speed.

Several new projects are being considered, among which are a \$1,000,000 hotel to be built, in the downtown business district, by David Stott.

Considerable discussion is also being heard over the proposal to build an auditorium and hotel costing \$2,000,000. Detroit feels the need of a convention hall, adequate to care for the different conventions that come here, and this auditorium, if properly financed, would be a big boost to the city. However, there is some doubt as to whether the promoters will get the money or not, and this matter is still in the air, so to speak.

The Detroit Automobile Dealers' Association is considering the erection of a big convention hall, one of the purposes of which will be the housing of the annual motor car show which is held in this city. Detroit is the motor car center of the country, and it is but proper to say to automobile manufacturers that this city should have the best show of machines. The Madison Square Garden in New York is now recognized as the automobile show center, and there is no gainsaying the fact that Detroit motor car dealers are jealous. Another project is a 20-story bank building to be erected on one of the principal downtown corners by the Dime Savings Bank Co. The money to back this plan has already been secured, say bank officials.

There has been a squabble in Detroit during the past couple of weeks over brick supplies for city use. Allegations of fraud, etc., have been numerous and it will take several sessions of city officials to get matters properly straightened out.

A number of important building propositions are being considered in different parts of the state. Contractors in Grand Rapids, Lansing, Saginaw, Bay City, Kalamazoo, Jackson and other cities in the state, are rushed, and they say they now have more work than in any previous years. Building permits are much heavier than usual, and it is generally believed that good records will be shown when the year's figures are computed.

The Farmers' Savings Bank, in Ludington, has a new bank building, constructed of brick; the Michigan Crank Shaft Co., will move its plant from Muskegon to Lansing; Nelson Bros., of Alma, are considering building an addition; the Haight Auto Lighter Co., of Lansing, will erect a plant; the Michigan Washing Machine Co., of Grand Rapids, is considering building an addition; the Angle Steel Stool Co., of Otsego, is erecting a small addition; the Holland Furnace Co., will build an addition; the Beach Manufacturing Co., will erect an addition to its plant in Charlotte; Bradford & Co., of St. Joseph, have increased their capital and will erect an addition; Hastings is considering erecting a factory plant for a Grand Rapids furniture company, which proposes to move there; the Wolverine Portland Cement Co., of Coldwater, has erected a small brick addition; the Montrose Canning Co., of Montrose, is planning to erect an addition and the St. Johns Portable Co. is planning to build an extensive addition sometime during the coming year.

KANSAS CITY.

Kansas City, June 26.—It has been a good many years since things were as quiet in the way of a demand for brick as at the present time in Kansas City, and there seems to be nothing in sight to increase the business just at the present time. In the city the building operations are away below normal, in spite of the fact that money is easy, and those who have been borrowing money to carry on their operations in the past could continue on the same favorable terms. It seems that building investors are a little shy just now, and are waiting for something to happen. None of them seem to agree on just what they are waiting for, but there is a general tendency to wait, and that is enough to make brick sales slow. A good many think there are plenty of buildings here to house all the people and all the business that will demand housing for this year, and they may be right, as things are turning out.

In the surrounding country the drouth continues to be felt, except in spots, and there is a general tendency for everyone to pull in and work close at home. Farmers are cutting their hay, for instance, and are finding it less than half a normal crop, and this is causing them to postpone all kinds of building operations, and will of course make business slow with the dealers in small towns. The cities in the surrounding territory are reporting about the same conditions which prevail here, and with everything at the low level in the way of demand there seems little to encourage production on the part of brick plants.

According to the best information obtainable the most of the plants in this territory are running very light, if running. A good many of them have shut down and will wait for conditions to improve, preferring not to produce rather than sell their product at less than it is worth. Some are working on contracts already made, and are busy, especially those turning out pavers, but the demand for pavers is not what it was a year ago, and there is little encouragement in the future prospects. These plants are, of course, producing a good many brick that must be sold for other uses, as well as paving, and they are trying to find a market here, but it is not a good market by any means. Prices have continued to go down until \$5.50 on track in Kansas City is about the best that can be secured by the local jobbers, and as they must make their profit out of this it is evident the plants do not get rich on a single car. The jobbers are generally reporting very slim sales at that price, and are predicting even lower prices. Some say that lower prices are being made direct to the contractors, and that, this is demoralizing what little market there is.

Only part of the local plants are in operation, and they will probably continue throughout the season. Some are using practically all their own output for buildings erected by their own construction companies, while others are depending upon the open market, and only those producing a favored product are reporting anything like a fair demand. This is a season when the local plant has the advantage, as the freight rates from outside plants makes it possible for the local plant to get the brick on the ground at a less cost, and there is still room for a small margin of profit if a steady run can be made when brick coming in from the country cannot show a profit at the same selling price.

The big Armour-Swift-Burlington syndicate, which owns the land lying directly across the river north of this city, including both the big bottom which they have just dyked, and the bluffs to the north, announce that they are going to build a city there. They own 2,500 acres of ground there, and have employed an industrial agent to secure factories to locate thereon. As the syndicate is very strong it is a certainty that they will make a go of this proposition, and this will probably cause a demand for a good many brick, when things once begin to move, but there is nothing certain about when the start will be made. The new bridge which will connect that side of the river with Kansas City, on which the street cars will be run, is expected to be finished in August, and this will give easy communication. Those who have been watching movements across the river are inclined to think that there will not be much of a demand for brick over there this year, but that it may cut a big figure with the business of next year.

The Marshall Brick Works, of Marshall, Tex., which was but recently organized, will have a capital stock of \$40,000, and the following officers have been elected: Chas. Cobb, Jr., president; W. H. Pugh, vice president and general manager; and J. W. Ditwiler, secretary and treasurer.

The Mangum Press Brick Co., of Mangum, Okla., has increased its capital stock from \$20,000 to \$40,000. The directors are D. J. Doyle, Lee Hawkins, J. Ledbetter and P. A. Janeway.

The Lockesburg Brick Manufacturing Co., of Lockesburg, Ark., is building a plant to have a daily capacity of 20,000 common brick. T. J. Williams and A. N. Davidson are interested.

The Republic Brick & Construction Co. has been incorporated in Springfield, Mo., with a capital stock of \$10,000.

The Buff Brick & Manufacturing Co., of Buff City, Kan., is reported to have leased a brick plant in Cherryvale, Kan., and put it in full operation.

The Excelsior Brick Co., of Fredonia, Kan., is installing a 32-track waste heat drier and a 64-chamber continuous kiln.

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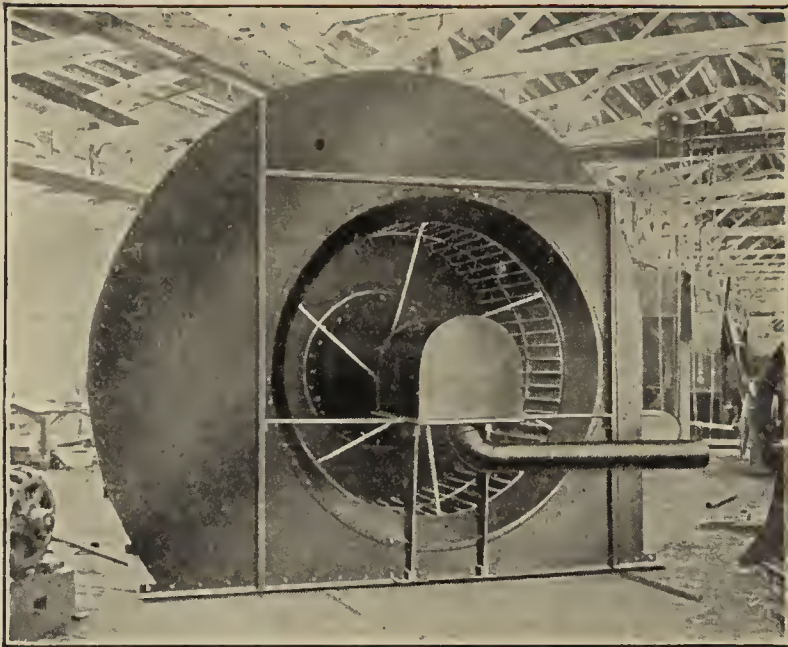
Table of Contents

Page	Page
Proof Against Fire..... Frontispiece	Industrial Power—Stockton Fire Enamel Brick Co. 56
The Fireproof Millennium—Statistics of Fire Waste—What is a Fireproof Building—Danger in Roofs and Win- dows—Our Duty..... 42-44	The Fire Waste, by Hon. Walter L. Fish- er 57-58
Better Construction Methods..... 44	Consider Brick Fireproof..... 59-60
Sane Building, by F. W. Fitzpatrick.... 45-46	Mrs. Shaw Again..... 60
San Francisco, City of Brick..... 47-48	Brick, Tile and Terra Cotta—Their Behav- ior and Care, by Owen B. Maginnis. 61-62
Death of Cyrus Chambers Jr..... 49	Are We Using the Wrong Materials?..... 62
Kite Picture of Chicago, The Wonder- ful City of Clay..... 50-51	Clay's Important Part—New Northwestern Depot 63-65
Brick, its Durability and Artistic Possi- bilities, by A. R. Van Dyck..... 50-51	Saving Fuel 66
Reducing Fire Insurance Costs, by War- field Webb 52	Automobile Delivery 66
When is a Fireproof Building Fireproof? by Allen E. Beals..... 53-55	The Making of a Steam Engine—Visit to the Plant of the Frost Mfg. Co... 67-72
An Interesting Bit of Brick Work..... 55	Trade Review—The Windy City, Condi- tions in New York—Cur Buckeye Let- ter, etc. 73-78

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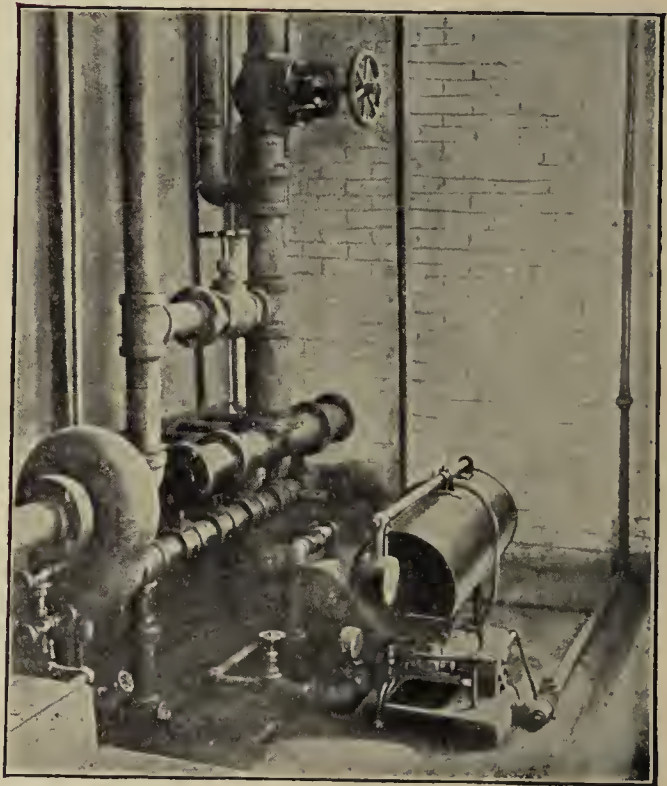
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BRICK

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JULY 15, 1911

THE FIREPROOF MILLENNIUM

America's Stupendous Fire Waste Demands Pertinent and Persistent Efforts to Educate the Public to the Superiority of Burned Clay Building Material— That Way Lies the Sane Building Age

Considering the astounding progress made in all lines of industrial development we of the twentieth century believe almost anything possible for the future. With the advance made in construction methods during only recent years, we can even look forward to the time when the construction of a building not fireproof would appear as ridiculous as would the illuminating of a modern skyscraper by candle-light in the present day.

It seems not at all unreasonable to anticipate that the day is not far distant when fire insurance will be considered a useless luxury and the expenditure of vast sums for the maintenance of fire departments an unwarranted municipal extravagance.

It must be admitted that such speculations are not altogether wild and theoretical when we stop to consider that it is even now possible to construct a building so absolutely non-burnable that the fire fiend can make no headway whatever in it, no matter how good a start the flames may secure in such combustible material as the building may contain. Even the possibility of great loss through the burning of combustible contents can be eliminated when the building contains improved fire prevention appliances such as overhead sprinklers. Such a building needs no insurance and is independent of the fire department's services.

A study of the fire loss statistics of the United States and of the municipal reports of fire prevention costs should convince the most skeptical that it is to our economical interests to endeavor to attain in our building construction methods, the high standard which will bring about the fireproof millennium.

Statistics of Fire Waste.

Fully 25 per cent of our new buildings simply replace those destroyed by fire. In other words, we build in this country about one billion dollars worth of new buildings annually and burn down buildings to the value of 250 million dollars. This fire loss, however, does not represent our total fire costs, for we must add to this figure the cost of our fire insurance (less what the insurance companies pay back to us in losses); and we must also add the cost of maintaining our expensive fire departments, thus making our total expenditures for fires annually in the neighborhood of 500 million dollars.

Insurance seems a pretty good thing to the average business man and yet it is a mistaken idea to suppose that we are "protecting" ourselves through insurance. The insurance companies give us back to cover our losses only about half of the value of the buildings which we allow to be destroyed.

Our total fire cost annually amounts to more than our annual production of gold, silver, copper and petroleum.

One discouraging feature of the fire situation is the fact that while our population has increased 74 per cent in 30 years, our fire losses have increased 134 per cent in the same period.

It is encouraging to note that building statistics for the year 1909 report over 73 per cent of "fire resisting" buildings. This statement of percentage is misleading, however, because of the fact that the words "fire resisting" means almost any kind of construction that is not wholly of wood.

As a fact, probably not more than 14 per cent of all the buildings constructed can be rightly termed fireproof and in many of these otherwise fireproof buildings the builders fail to enclose the stairs and elevators or to protect the windows properly.

As a Matter of Conservation.

We have heard much discussion concerning the conservation of our natural resources. We have been told of the vast wastes that are constantly taking place through the destruction of lumber by forest fires, through the loss of our fuel resources and other wasteful conditions, but nothing has been said of the millions and millions of dollars which are going to waste through our failure to construct our factories, residences and business buildings in a sane and economical manner.

In these United States we have to build 100,000 buildings annually to take the place of those which we carelessly burn down. We have been cheerfully paying our immense fire insurance taxes and adding to our municipal burdens without realizing that these wastes could be readily bettered through a reformation of our building codes, requiring that no buildings should be erected except those which are absolutely fireproof. The money which we waste annually on fires, if put into buildings of permanence and beauty would add immensely to our real estate valuation and to the actual wealth of the country.

The Evil of a Misnomer.

One of the greatest set backs to real fireproof construction has been the tendency to deceive ourselves by calling things by their wrong names. We are in the habit of calling a building fireproof simply because it is constructed largely with fireproof materials. A building may be of steel, have fireproof construction and may even have its floors and partitions of fireproof material and yet be nothing more than a fire trap because of the immense amount of interior wood finish which it contains and because of the splendid flues formed by its elevator shafts, unprotected window, door and staircase openings. Such a building can be readily likened to an excellent stove or furnace, in which the contents will burn

so fiercely and with such an intense heat as to create its own destruction, just as the stove might be destroyed if containing a sufficiently intense fire for a protracted period. It is a crime to call such a building fireproof and to create in the minds of its occupants a feeling of safety when we have before us such horrible examples

terial and the increasing cost of lumber, the difference between fireproof and non-fireproof construction is not so great as might be supposed. First cost, however, is not the only consideration. The saving in maintenance repairs and insurance is far greater than the interest on the increased cost of such construction, to say nothing of value added to such construction through its greater permanency.

Three Types of Buildings.

Buildings are erected to serve manufacturing purposes, to house stores, offices or other business enterprises, or as residences. The application of fireproof methods to all these forms of construction is quite possible. Up to the present time the effort to produce fireproof construction has been largely confined to skyscrapers and office or store buildings in the larger cities, and numerous examples of structures which can honestly be called fireproof are to be found today in New York, Chicago and other leading municipalities. There has also been a decided advance in methods of factory construction, although the highest standard has been sacrificed to a considerable extent to secure cheapness. The day of the wooden factory building is past and the wise manufacturer does not now consider even what has been known as slow burning mill construction but endeavors to eliminate wood so far as possible. The one trouble with most builders has been that they do not go far enough. They stop with the structural steel and fireproof walls, forgetting that the window, door and other openings should be properly protected to insure their plants from destruction either from exterior or interior fires.

At the present time our fire waste foolishness is shown most conspicuously in our residence construction. This is true of our city residences and of the isolated houses in city suburbs or smaller towns. Many a man deceives him-



Such a Building as this Makes a Splendid Fire Barrier. Oliver Bldg., Pittsburgh, Four Upper Stories of Enamel Terra Cotta Made by Northwestern Terra Cotta Co.

of loss of life which have resulted from fires in this kind of building.

What Is a Fireproof Building?

In the construction of a building which can be called fireproof, all the materials and devices which have been perfected in recent years for such constructive purposes should be joined together in one harmonious whole. In such a building structural steel, burned clay, fireproofing, common building brick, face brick, terra cotta block, architectural terra cotta, clay floor and wall tile, faience, clay roofing tile, metal window and door frames, metal ceilings, stairways and skylights, wired glass for all windows, metal doors and all metal or tile interior trim, should be in such a combination as to make the structure not only fireproof but so durable and permanent that it becomes practically indestructible.

While at first thought such construction might be considered too expensive to be possible for all types of buildings, yet with the decreasing cost of fireproof ma-



Proof Against Fire. The Alfred Granger Residence, Lake Forest, Ill., Faced with Continental Brick.

self under the idea that he owns a fireproof house simply because its walls are of brick, whereas he is liable at any time to find on his return home at night, his beautiful house reduced to ruins and his household goods destroyed.

That building of fireproof residences is quite possible has been proved during the past two years. Today clay fire-

proofing and even structural steel are used to a considerable extent in residence building and the time is coming when no builder would think of allowing any wood to be used in the construction of a new residence, not even for the floors or interior trim. The furniture and inflammable contents are sufficient fire hazard. The adoption of wire glass for use in residences and of metal doors and stairways will be a development of the near future.

Danger in Roofs and Windows.

It is estimated by insurance authorities that fully 50 per cent of all the damage done by fire to buildings (other than that in which it originates) is traceable to improperly con-

unpopular that it need not be considered. The construction of roof framing with timber, however, is still continued to a considerable extent, even for buildings which are otherwise to a large extent fire resisting, although it seems strange that architects should continue to specify wood framing for buildings that are otherwise constructed properly. Statistics show that a very large per cent of the fires either originate in such roofs, or the spread of fire from the interior is made possible by their use.

A more sane policy in roof construction is certainly to ensue through the development of improved ideas in the use of structural steel and clay fireproofing for all forms



The Dawn of a New Day.

structed windows, and that much of the entire fire loss of the country is due to the lack of proper window protection. Metal window frames and wire glass and fire shutters offer the only solution for this problem, and architects and builders are fast learning that no building can be considered fireproof, the windows of which are not protected in this manner. With properly protected windows, a fireproof structure becomes an actual fire-wall or barrier and such buildings are the surest prevention of the spread of great conflagrations in cities.

Insurance authorities consider that the one condensed evil productive of the greatest fire loss in the country in the past has been shingle roofs, but with the improved building codes and more sane methods of construction, this danger, except in smaller towns, is rapidly being eliminated and the use of wood for roofing has become so

of building construction, and it is not only feasible but economical to make all roof framing of structural steel; and for smaller buildings hollow tile construction has been perfected to such a point that even the use of steel or other framing for the roofs is no longer necessary.

What Fireproofing Has Done.

It is safe to say that burned clay fireproofing, otherwise known as terra cotta hollow tile, has made fireproof construction possible. It can also be said that burned clay fireproofing has made steel construction practical. Without its covering of fire resisting clay, the steel members of our great buildings would be valueless. They would be subject to disintegration through rust and electrolysis and interior fires would warp and distort them so as to cause the destruction of the buildings, of which they form the backbone.

Through the development of this branch of clay manufacture has also been produced the present day perfected floor arch which makes possible fireproof floors of sufficient strength to withstand the weights which they are intended to bear.

Through the development of this form of terra cotta, the fireproof roof has also been made possible and today a system has been successfully developed whereby even the roofs of isolated residences may be constructed of this material without the use of steel structure.

Numerous examples of hollow terra cotta tile residence construction are to be seen in various parts of the country but it is to be regretted that in many cases the exterior walls have been finished with stucco, a cheap looking, unsatisfactory facing, that does not do credit to the substantial character of the buildings themselves. There is no particular object in the stucco finish from the

BETTER CONSTRUCTION METHODS.

"We are interested in better building construction, and when representatives, intelligent business and professional men, are willing to give some of their time to the discussion of things which will tend to make their city a better and safer place to live in, it is a hopeful sign that a material improvement over present conditions will result in the near future.

"If one-half of the money spent by American cities for fire losses were spent for better building construction, the annual loss by fire would soon begin to decrease. Improvement along the line of better construction can only come gradually. It can, and should, be hastened in thickly settled communities by stringent building laws. City officials must be awakened to their responsibilities and the individual shown that his own pecuniary interests lie in lessening the fire waste. Old buildings cannot be torn



Handsome Fireproof Residence of Medill Patterson at Libertyville, Ill. Built of Dark Red Rough Brick. Howard Shaw, Architect.

standpoint of economy, as such finish is not permanent or durable, and a facing made from any of the many beautiful varieties of face brick or terra cotta which are today on the market, would largely increase the beauty and value of such residences.

Our Duty.

The matter of conservation has been considered of such importance as to command the attention of leading business men throughout the country. National and state organizations are furthering this movement, and it is one of the great public questions of the day. How much more important then must be this question of fire waste which faces us daily.

It is clear that it is our duty as citizens to further in every possible way fireproof construction. We should not only study the subject ourselves with the utmost interest, but we should preach the fireproof gospel to all with whom we come in contact. Foolishness in building construction will end when the public is fully educated in this matter and when all architects, builders and citizens in general have learned the folly of non-fireproof construction; and when that day arrives, and when we have burned up a few billion dollars more of the flimsy buildings which now exist, the fireproof millennium will have become a reality.

down at once and rebuilt, but we can see to it that no more fire traps shall be built where they are a menace to other structures.

"When a man builds a house in the country, it may be that he has a right to jeopardize his own life and property and those of his family and gamble with the insurance companies, but there is no question that the owner of property in a city or town has a right to erect a structure which will be a menace to the safety of the property of the adjacent owner. This principle is clearly recognized in practice and many of the smaller cities are adopting building codes requiring fireproof construction throughout a certain portion of the business section.

"At the present price of building material, fireproof construction can be erected at a cost not to exceed 10 or 15 per cent more than non-fireproof, and when we consider that a fireproof building deteriorates about one-ninth of one per cent per year as compared to 4 per cent for ordinary buildings, that they rent better and that money can be borrowed on them on better terms, that they are vermin-proof, cooler in summer and warmer in winter, it would certainly seem the part of wisdom and self-interest to adopt a better method in every case when the building is to be of a permanent character."

SANE BUILDING

Personal Liberty in Building Does Not Mean the Right to Expose Your Neighbor's Property to Fire Danger from Your Poorly Constructed Fire Trap

By F. W. Fitzpatrick

A sane Fourth of July used to seem impossible. We had the mistaken notion that it was wrong to tamper with "personal liberty," and if a fool kid insisted upon blowing out his eyes and shooting off his fingers, our only recourse was to have the doctor and the bandages ready. We have learned better; we have made laws and enforced them, and in some of our cities not a fire cracker was shot off this year and as a result the Fourth fatalities, injuries and fires have been cut in two. Another year or so and no city will permit the old time murders, suicides and arsons committed in the name of Patriotism.

So with building. A few years ago we dared to venture a prohibition of frame construction over a certain height. There was an awful howl about "persecution,"

tests use it, not because it is the cheapest of good materials, but from preference, and we now see the very best commercial and domestic buildings being erected of brick. And what beautiful effects are obtained, how plastic is the material, what depths of tone, what charm results from the artistic handling of even the commonest of red brick! Combined with well modeled terra cotta it is the first material to which an architect turns when he wants to do something especially good, and like most good things it is the cheapest in the end. Better still, even initially, it costs far less and is easier handled than any of the materials that, at times, have supplanted it for a little while or that are brought forth to compete with it.

*As soon as the exterior of a building is disposed of



Dangler Residence of Brick at Lake Forest, Ill., Built by E. P. Stanberg & Co. Frost & Granger, Architects.

"infringement of liberties" and all such rot, but the law stood. We were emboldened and barred frame construction entirely within certain districts. Another howl and more success. And now we want the states to bar frame construction anywhere where it may endanger adjoining property. In other words, only a farmer well away from neighbors may indulge in the luxury of burnable buildings. More than that, we don't want "half-fire-proof," "slow-burning," nor any other partial measure, but we insist upon real fire prevention in our cities and larger towns by excluding and prohibiting anything but first-class, fully fireproof construction. It may take some time and many howls and protests to reach the point, but it is only a question of time when all our citizens will realize that in that form of construction only lies real safety, sanity and absolute economy.

Some misguided architects still think that when they have a monumental building to plan, they must use granite or marble in the external walls. Whenever one of these buildings is in any way exposed to fire the damage to those walls is great, in most cases an entire new "front" has to be put on. Brick remains so perfect in the face of the hottest fire that the really sensible archi-

the whole matter simmers down and the question of fire-proofing a building has been reduced to this—regardless of the hundred and one other items that are necessary to make it thoroughly fire-resisting—which system of structural fireproofing shall be used (a) a steel frame and hollow fireproof tile protection, floors and partitions, (b) a steel frame and concrete protection and floor arches, or (c) a reinforced concrete construction? And the question is asked insistently and debated acrimoniously. It is really clay tile vs. concrete fireproofing. And it is not a merely academic question, nor one that interests only specialists and the different manufacturers, but is one of fact, a large and most important fact.

The best engineers now concede that reinforced concrete is a structural material and requires protection as does steel and iron, that in itself it is fire-resisting, but its disintegration under fire is liable to be such as to expose the reinforcing steel or so to weaken it as to render the whole construction dangerous. Some advise that, like the steel, it be covered with protecting tile, while others—and they are perfectly right—maintain that all that need be done is to make floors and beams and girders thicker and the columns larger all around by an

inch or two more of concrete than is actually required for the strength of the member, such additional material serving only as a fire retardant and the structural value of the member itself being in no way impaired even if its protecting coating be entirely destroyed. This is on the same principle as the making of the wooden members of "slow burning" construction larger than needed, so that an inch or so may burn off without in any way affecting the stability of the building. The cheapest concrete could be used for its protecting coat, viz., cinder concrete, which is really one of the most fire-resisting of concretes—provided you are sure of cinders and not coal dust and dirt—but the authorities are afraid of using it in structural work on account of its destructive effect upon the steel reinforcement, so that in most cities it is absolutely barred in reinforced-concrete construction.

Burned clay is unquestionably the most fireproof, the least damaged by excessive heat, of anything that has

our modern art. And the perfection of its expression is to be found in its sub-art of ceramics—the burned-clay products.

Whatever deterioration or ruin there may have been in the brick and tile buildings of antiquity or of modern times, has never been caused by the disintegration or any inherent fault of the material itself, but has always occurred through the failure of the binding material, the mortar used in cementing those parts together. The concrete enthusiasts point with pride to the noble Pantheon at Rome as the very apogee of concrete construction, the greatest piece of vaulting ever done in the olden times. It may be well to add, lest we forget, that the main ribs of the magnificent vault are built, not of concrete, not of stone, not of steel, but of a far more perfect material than any of these—brick. The whole building, in its structural parts is of brick, and concrete finds its true place in construction, viz., in masses in the filling, in the panels of that dome.

All this may seem irrelevant, but it is not. The reader, I submit, should not only know the relative merits of each system, but also the strength, the bias, the objects of the parties back of the system. In the study of government, for instance, we should not only observe what has been accomplished, the legislative acts, and all that, but we should also know about the parties, the relative influence and power of each, what each has accomplished, and what each stands for. So with fireproofing. There are two camps, the steel and tile camp and the reinforced concrete camp—Republican and Democrat as it were—I have not a particle of use for a man who sits upon the fence. I am a strict party man and warn you accordingly. I can see the good in the other party, and I will give it what I deem a fair show, but I am by training, selection, environment and firm convictions a staunch Republican and a steel and tile man, and I am very much opposed to the indiscriminate and general use of reinforced concrete construction, and in favor of limiting its use to experts only and even then under the strictest municipal regulations and inspection.

Much concrete work is done, but in the larger, more important buildings, steel, frame and tile construction is still the leader. In New York, for instance, where there are more concrete engineers and systems than anywhere else, it was protestingly claimed by concrete advocates in a recent hearing before the mayor that 60 per cent of all the fireproofing done in the city was executed by one tile company, the remaining 40 per cent being divided among the other tile companies and all the reinforced concrete companies together. The "supplanting" of steel and tile we read about has apparently yet a long way to travel. Even the most enthusiastic votaries of reinforced concrete only claim, however, that it is "as good as steel and tile." The only advantage I can see in it is that you can always get cement anywhere and can usually procure sand and slag or broken stone or gravel and light steel sections and water with as great facility, so that reinforced concrete can be made in any locality. On the other hand, big steel sections, beams, girders, etc., and fireproofing tile are sometimes hard to get and are consequently costly, on account of the haul, far from the big mills and factories of Ohio and the East, so that in the remote South and far West that construction is in some cases really prohibitive.

*Note—All that follows is an excerpt from a text book just published by the American School of Correspondence and written for that institution by Mr. Fitzpatrick. The treatise upon "Fire Prevention" that this is excerpted from is easily the best thing that has ever been done in that line. Every brick manufacturer should have a copy.



Capital in Lobby of the Heart Bldg., Chicago, Ill., Made of Enamel Polychrome Terra Cotta Manufactured by the Northwestern Terra Cotta Co., of Chicago.

ever been or is known and used in the building trades and is not of yesterday or the day before. Like gold that has been the standard of value from time immemorial, so is burned clay the most resisting element, the standard material of imperishable construction. Examine the ruins of ancient Greece and of Rome and you will find monuments of stone and of marble crushed and battered and decayed and their dates a matter of question and speculation; but whatever you find of burned clay is intact, clean cut, exactly as it was fashioned by the hand of the primitive clay worker.

In Egypt, in Assyria, in Babylon, we have even sun-baked brick 3,000 and 4,000 years old and as good as new. At first, Christian works were fashioned in the clay products and the art was carried to great perfection in the first capital of Christendom, Byzantium. Since that time—cavil and carp at that notion as we may—we must concede that Persian art and then Arabian art (preserved to us by a strange anomaly of the so-called barbarian and all-destroying Moslem) has been the refining influence of

NEW SAN FRANCISCO, CITY OF CLAY

In the Rebuilding of the Golden Gate City, Burned Clay Products Played an Extraordinarily Prominent Part

Any photograph of a city, even such a small city as San Francisco, unless taken from a balloon, is certain to conceal even more than it shows. So the illustration shown, though it was taken from a good elevation, and covers the principal business district of the new San Francisco, including nearly half the area burned over in 1906, shows only a few of the principal buildings, those in the foreground shutting off the view of many fine brick structures of eight, ten and twelve stories. Yet, to one who knows the city, such a view calls to mind the buildings that cannot be seen; and just a thought as to the materials used brings a realization of the tremendously important part taken by brick and clay products in the reconstruction of the city.

The view here shown was taken from the top of the David Hewes building, at Sixth and Market streets, itself a 13-story structure of brick, fireproofed with terra cotta, and faced for the first two stories with ornate white matt-

respectable rented dwellings, degenerated into rooming and boarding-houses, but is now being rebuilt with large family hotels and apartments, almost entirely of brick, with terra cotta, as a rule, for facing. Many lots there are still vacant, but they are being filled up very rapidly, and by 1915 little trace of the fire will remain. Some of the largest of the new buildings of this section are seen along Van Ness avenue, the western limit of the burned area, formerly a fine residence street, and now divided between magnificent family hotels, lodge buildings, churches, and automobile establishments. To the extreme left and in the upper left-hand corner of the view is shown a fringe of the old wooden buildings not reached by the fire, though even here many brick apartment houses are being erected.

Following the view down Mission street, just south of Market, the first large building is the seven-story stone-faced brick structure of the California Casket Co. on the



San Francisco, the Phoenix City, in the Rebuilding of which Burned Clay Products Figured Extensively.

glazed terra cotta. The view is in a northerly direction, omitting a large district to the south and west, in which there are now a large number of tall brick buildings. To the right, one looks across the old U. S. Mint to the wholesale district, consisting principally of large loft buildings occupied by wholesale houses and manufacturers' agents. Many good buildings stood in this section before 1906, but it was defaced by countless old wooden rookeries and tenements, the homes of the poorer working people. It has been rebuilt in brick, and is given over to mercantile purposes almost exclusively.

The view down Market street, and over the financial, mercantile and retail shopping districts north of Market, is obstructed by large buildings in the foreground, which shut out some of the most important office buildings in the city, for instance the Claus Spreckels building and the Mills building, and the Merchants' Exchange. This part of the city just five years ago was a mass of ruined walls, the streets piled high with debris, out of which rose a few buildings, whose solid brick and steel had withstood both fire and earthquake. West of this is a district which in 1906, and for a year or more afterward, was utterly desolate and barren, with blasted trees, broken steps and foundation walls and gaunt brick chimneys rising above the ashes of wooden buildings. This, the old district of

south side of the street. On the north side is the California Plate & Window Glass Co.'s building, of brick, faced with yellow pressed brick. This would now be concealed by a new five-story building, faced with marble and white glazed terra cotta. Beyond and hidden by it is the five-story Bass-Hueter building, of brick, the first story of which is faced with green tile, the upper stories with brown, and cream terra cotta trim. Farther, on the south side, at the corner of Fourth street, is the seven-story Hotel Irwin, of cream pressed brick, adjoining a six-story loft building of red face brick, and still farther on the same side is the six-story Elkus building, of yellow pressed brick with terra cotta cornice. Beyond this, again, is the two-story Sanborn-Vail building, hardly visible, faced with a fine dark sand-lime brick, and opposite this, hidden by nearer and taller structures, stands the rebuilt St. Patrick's Church, of plain common brick. Beyond this is the Heyman-Weil building, five stories high and covering a large area, entirely of brick, with yellow facing. Opposite this, on the south side, is a fine two-story building of white glazed terra cotta. Beyond this is the corner of Third and Mission streets, beyond which little can be discerned. The 10-story stone-faced brick Gunst building can be seen here. The other corners at this crossing are all occupied by brick buildings; the 10-story Aronson

building, faced with tan pressed brick; the Williams building of similar material, and on the other corner a four-story structure of plastered exterior. Beyond this are more than a score of six and eight-story buildings, hardly visible in the picture, above which rises the old Rialto building at New Montgomery street, of yellow pressed brick and terra cotta, which is just being rehabilitated; and the 10-story Atlas building at Second street, of plastered brick. On the other corner of Second and Mission, out of sight, is the large eight-story Wells-Fargo building, the upper six stories of pressed brick on a granite base. Both this and the Atlas stood through the fire with comparatively slight damage, and were repaired within the following year.

Returning to the point of outlook, the view passes over some of the nearer structures to the new Empress Theater, entirely of brick, with a highly ornate white glazed terra cotta front. Between this and the David Hewes building are the Eilers building, brick, with a white terra cotta front worked in intricate design, and the Hale department store, most of which stood through the fire, faced with white glazed terra cotta, laid in columns for the upper stories.

The view down the right-hand side of Market street is stopped, practically, by the 15-story Humboldt Bank building, which, though mostly of other materials, shows an enormous white glazed brick light well, extending most of its length on the further side. Nearer at hand is the large four-story Lincoln building on the city's lot at Fifth and Market, of yellow pressed brick, and above it rises the seven-story Emporium, of brick with stone front. Hidden by this is the 10-story concrete Pacific building, for the front of which brown and green tile has been used with telling effect, and the central light-well, which is lined with white glazed tile. Of the busy intersection of Third, Market, Kearney and Geary streets, little can be seen except the Chronicle building, on the north side. This is of the red pressed brick, so popular here a few years ago, and the walls withstood the fire so well that, in repairing it, the height was raised to 16 stories. The Claus Spreckels building, of similar height, which stands opposite, is faced with light sandstone, but the amount of clay material used in the interior almost places it in the brick building class. This building is hidden by the Humboldt Bank, as is the 12-story Hearst building, still unfinished, which is faced with white glazed terra cotta, with handsome polychrome belts above the second and third stories. Beyond this, and also hidden from view, are the 10-story Monadnock building of yellow pressed brick, which stood through the fire; the new Palace Hotel, eight stories, of pressed brick with large terra cotta cornice.

The Westbank building, just beyond, is of light terra cotta, very ornate, with large griffins projecting from the cornice, the ground floor being faced with dark brown tile. Further down, beyond the small terra cotta building of Roos Bros., is the 12-story Phelan building, one of the largest structures in the city. This is faced entirely with light glazed terra cotta, perfectly plain except for ornamental cornice courses. Farther down, just before the Chronicle building is reached, is the 12-story Mutual Bank building, of brick with stone facing and a peaked tile roof. Beyond the Chronicle building, which almost hides them, are the 10-story Crocker building, of yellow pressed brick and granite, and the nine-story Nevada Bank building of the same materials, both of which passed through the fire with little injury to the structural work. Entirely hidden from view is the 10-story Postal Telegraph building at Bush and Market streets, of orange pressed brick and terra cotta, and the large group of similar buildings

in the same neighborhood, and many others farther on.

Many important buildings are noted about the center of the view, in the middle distance, yet some of the most important, in the retail district, are hidden. The large white building at the top of the hill is the Fairmont Hotel, of white terra cotta, which was new at the time of the fire, and whose walls required but little repair work afterward. Another white building, some distance to the right, is the new terra cotta home of the Metropolitan Life Insurance Co. Nearer, and just to the right of the Fairmont, is the St. Francis Hotel, 12 stories high, another of the brick and stone structures which stood above the ruins; and just to the left of the Flood building appears a corner of the 9-story Nathan Dohrmann building, brick faced with stone. This and the St. Francis mark Union Square, around which are ranged about a score of large buildings, only one or two of which do not properly come in the brick class. Between the Nathan Dohrmann and the Flood buildings appears the top of the 16-story Whittell building, of yellow pressed brick, whose steel frame had just been erected at the time of the fire, and which was known at the time as the "bird cage." To the right of this, over the top of the Flood building, appears the Addison Head building, 12 stories high, of cream colored terra cotta, located in the center of the shopping district.

Many other important buildings, not plainly shown in the picture, might be mentioned, but it is the same old story, brick everywhere. Of the really large structures a large number are faced with stone, and a few, as has been mentioned, are constructed largely of other materials. There is hardly one, however, in which brick, terra cotta, or other clay products do not serve important purposes and a general review of the buildings, large and small, in the parts of the city covered by this view, shows an overwhelming proportion of brick construction. Aside from the exterior structural walls, fireproofing and, to an even greater extent, interior partitions, are of hollow terra cotta, the same material being used for floors in many of the principal buildings. Light wells and elevator shafts generally are lined with white tile or glazed brick, and the same material is not infrequently used for facing. Taking a general average of large and small buildings, the favorite facing material is pressed brick, in yellowish color tones, varying from light cream to dark tan or orange. Red pressed brick is comparatively little seen. Ordinary or glazed terra cotta, in colors to match the pressed brick, is used to a very large extent, especially for trim, but often for entire facing.

Some of the prettiest buildings in the city are of white or very light colored glazed terra cotta, in some places plain, in others worked in more or less elaborate patterns. In the last few years polychrome work has been steadily gaining in favor, with the demonstrated ability of local brick makers to produce this material, and many of the newer buildings are handsomely decorated in color designs. In the new San Francisco, colors, especially light colors, are noticed to a far greater extent than in the old times, owing largely to the smoke and weather resisting qualities of modern clay products. Some plastered brick fronts may be seen, but this treatment, rather common in former years, is now the exception.

For general structural work, the common red brick stands far ahead of all other materials in the rebuilding of San Francisco. It would be hard to estimate how many millions of old reclaimed brick, taken from the ruins, have been hidden in new walls, and almost as difficult to reckon the hundreds of millions, produced each year by plants around San Francisco Bay, that have been used in the rebuilding of the city.

CYRUS CHAMBERS, JR.

We learn with deep regret of the death of Mr. Cyrus Chambers, Jr., head of the firm of Chambers Bros. Co., of Philadelphia. Mr. Chambers had been all his life identified with the clay machinery interests and was well known throughout the industry.

Cyrus Chambers, Jr., was born December 6th, 1833, at Kennett Square, Penn., of Quaker parentage, and died suddenly on July 9th, 1911, after a brief illness.

Mr. Chambers, Jr., early manifested an inherited tendency towards mechanical pursuits, and even as a boy made many mechanical appliances that attracted attention. A miniature High Pressure Steam Engine, constructed principally of gold and silver and composed of over 150 pieces, being an achievement that attracted considerable interest. The engine, boiler and stack weighed less than one-half ounce, and Mr. P. T. Barnum's agent offered Mr. Chambers one thousand dollars for this engine, which was declined.

The invention of a machine for folding printed sheets, books and newspapers was his first invention reduced to commercial use, and in 1857 Cyrus and his brother Edwin gave up the dentistry profession, formed a co-partnership, and started the firm of Chambers Bros. & Co. for the manufacture of the folding machines.

During the early period of the firm's existence Mr. Chambers' duties covered not only those of an inventor, but he was also draftsman, pattern maker, and oftentimes helped in the actual construction of the machines. When delivered to the customer he personally attended to the erection and starting of the machines; and after payment had been received took a portion of the price to cover traveling expenses and solicit additional orders.

Notwithstanding divers adverse incidents, including long continued patent litigation for the defense of his claim to these inventions, the young firm gradually accumulated capital sufficient to establish their business on a better basis.

In 1861 they manufactured a domestic sewing machine, making large numbers of this machine under contract. At about this time, at the urgent solicitation of a friend who owned the building in which their shop was located, they took up the work of converting flint lock muskets into the percussion type, and also the manufacture of scabbards for the government, and for which special machinery was designed, making scabbards that were thoroughly interchangeable.

During the early '60's his study of the question of brick making by machinery, resulted in the production of the

first "Chambers Brick Making Machine," which was erected at Pea Shore, New Jersey, at a place that was then known as the "grave yard of brick machines." So far as known, this was the first auger machine with an automatic cutter, and while the product was very small as compared with modern outputs, the machine was commercially successful, the output being about forty brick per minute. The Pea Shore machine, with an improved type of automatic cutter, is still in use and producing about forty thousand brick per day, after a period of over forty-five years.

The elder brother, Edwin, died in 1875, and Cyrus took over Edwin's interest in the firm and continued the business alone under the name of Chambers Bros. & Co. until 1888, when Chambers Brothers Co. was incorporated under the laws of the State of Pennsylvania; and Cyrus' nephews, J. Howard Chambers and S. Bernard Cham-

bers, who had grown up in the business, were given an interest therein, and the general management and details of the business assigned to them.

Mr. Chambers married on May 7th, 1868, Mary A. Pyle, of Wilmington, Delaware, daughter of Cyrus and Mary Mifflin Pyle, and unto them have been born four children.

In 1886 Mr. Chambers' health broke down, and he was advised to travel for his recovery and to get away from business cares. A trip to Yucatan and Mexico was planned and with his physician and eldest daughter, Isabel, the tour of those countries was made.

Many years ago Mr. Chambers was advised by an oculist that he was losing his sight from degeneration of the retina, and even then he began to educate himself as a blind man. A large room at his residence was fitted up as a mechanical laboratory, with a complete set of tools so arranged and fitted into re-

cesses that he was enabled to locate their position and replace them after use.

This mechanical laboratory was a great source of pleasure and entertainment during the latter years of his life, and did much to prolong his life after his infirmities made it necessary for him to give up active business pursuits. His interest in inventions and in new mechanical appliances was always keen, and until within a few weeks of his death it was not uncommon for him to keep at least one draftsman and two or more mechanics constantly at work upon development and experimental work.

Until his infirmities compelled him to give up outside interests he was an active member of the Franklin Institute, being for many years on its Committee of Science and the Arts, and also on its Board of Managers.



Cyrus Chambers, Jr.

Remarkable Kite Picture of Chicago,



1. New \$2,000,000 Blackstone Hotel.
2. Chicago Musical College.
3. Harvester Building.

4. Congress Hotel and Annex.
5. The Celebrated Auditorium.
6. Studebaker Building.

7. Fine Arts Building.
8. Chicago Club.
9. McCormick Building.

10. Stratford Hotel.
11. Railway Exchange.
12. Orchestra Hall.

Chicago, the Metropolis of the Middle West, with its two and a half millions of inhabitants, and its vast extent covering an area of 30 miles long and 12 miles in width, above all other cities in the world exemplifies the value and beauty of burned clay in building construction. It is a veritable "City of Clay," brick, terra cotta and fireproofing being used almost exclusively in its buildings. The above remarkable illustration shows the latest view of Chicago's lake front sky line looking west from Lake Michigan at Van Buren Street. The photograph was taken from a kite with a panorama camera 700 feet above the sur-

BRICK, ITS DURABILITY AND ARTISTIC POSSIBILITIES

By A. R. Van Dyck, Architect, Minneapolis

As gold has been the standard of value and the basis of practically all monetary systems, so has burned clay been the standard material and the basis of building operations for centuries.

Thousands of years ago, the whole civilized world knew that no material was so adaptable to all requirements, so durable under all conditions and so susceptible of a high degree of artistic finish.

However, we often forget the wisdom acquired by experience and are led astray by the desire for novelty and the use of new materials which promise much. Even as statesmen and politicians have sought to change the gold standard, so have we sought to change the building material standard and have experimented with various materials, a large number of which are worthless, and none of which however valuable in their own special places, are satisfactory as substitutes for brick. Times and progress combined are rapidly clearing our streets of these experiments in unsuitable material and we note with pleasure that practically all our new buildings are of brick and terra cotta. These buildings represent the perfection of the clayworker's art and are a lasting satisfaction to their owners.

Ten thousand years ago men made brick. To be sure these were only sun dried and could not long resist exposure to the weather. In course of time they learned to face these sun dried walls with burned brick. In the ruins of Babylon and other ancient cities these face brick are found elaborately ornamented with colored glazes in as perfect a condition as when first laid. Whoever was the discoverer of the process of burning clay into a hard durable substance should be accorded the honor of being one

of the greatest benefactors of the building industry and consequently of humanity. It has been said that buildings constitute a history of the civilization of the world; and if this is true, then brick are the type with which this history is printed.

From that distant time down to the present, the use of brick and other burned clay products has been continuous, and at different times and in different countries has attained a height of perfection and beauty almost unbelievable to one not thoroughly familiar with its possibilities.

All old Italian cities are full of the most beautiful brick and terra cotta work; in Germany it has been much used and in Holland its use was and still is almost universal. Spain is full of fine buildings of molded clay, while England has gone so far that elaborate carving is done on brick work of a fine, firm texture—carving such as we would think possible only in stone.

All of the old buildings show that brick is not only durable but that it is a material which, like certain wet goods, improves with age and acquires additional charm with each passing year. This feature should be of great comfort to the architect when his building proves not to be the thing of beauty he had expected. If it is of brick he knows that Nature will kindly take it in hand and after he has been dead for years some artistic soul will discover and disclaim over the wonderful coloring and blended tones of the walls.

But in accomplishing this result Nature does not take kindly to man's interference and if any assistance is offered it must be done very carefully and tactfully and it must not be in the form of paint. Often, we have seen

the Wonderful City of Burned Clay



13. Pullman Building. that in the foreground is the famous Art Institute. 16. University Club. 18. Montgomery Ward.
14. The large building in the back is the Peoples Gas Building, while 15. Illinois Athletic Club. 17. Chicago Athletic Club. 19. Public Library.

face of Lake Michigan. Fourteen kites were sent up and 25 exposures made before a negative free from smoke was secured, the operator lying on the ground and sighting with a field glass to judge when to make the exposures. The picture vividly shows the recent modern developments in sky-scraper construction, and in the view can be seen some of Chicago's latest and most handsome structures, practically all of which are constructed with burned clay materials, brick, fireproofing and terra cotta.

walls just beginning to bloom with the subdued tones of age "brightened up" with a thick coat of paint which utterly kills all the life, character and beauty of the material.

Paint is a good thing in its place, and like the mantle of charity may be made to cover a multitude of sins; but there should be nothing to cover in a brick wall. We should not forget that both the durability and beauty of brick work depend not alone on the making of the brick, but upon the mortar, the bricklayer and the man who designs the building.

The best brick will make a poor wall if improperly handled, and, by the use of good mortar and intelligence, much may be done with an inferior grade of brick. This does not, however, excuse the use of poor brick, for the result can never be entirely satisfactory. You know all about the making of the brick and how to obtain the desired color and texture; the bricklayer probably knows little about the processes through which the brick passes before reaching his hand, but he does know how it should be laid to secure the best results. While I, as the architect, may know even less than the bricklayer about the manufacturing process, yet I should know more about design; and our combined labor produces a complete building impossible to any one of us alone.

One important feature in the success of brick work which I should like to bring out may not interest you except as an additional means to successful building. This is the question of bond. Bricklayers, and architects as well, are just beginning to appreciate the importance of bond from the point of durability as well as of effect. Have you not, at a fire or even on some old building, often seen whole sheets of face brick peel off leaving exposed the real wall of common brick behind?

It is evident that such facing, merely tied on, can add little if any strength to the wall and it is a source of danger in case of accident. Why should we try to conceal the necessary bond, as though it were something improper, a thing not to be seen or mentioned in public?

In the old country numerous varieties of bonds are em-

ployed and they add greatly to the interest and beauty of the work not to speak of the strength gained by having the wall tied together into one homogeneous mass. Let us therefore have a bond, not invisible clipped corners or ties of wire and strips of metal, but a bond, visible and real, with each individual header doing its duty, undisguised. They give the wall a character and dignity which it would otherwise lack.

In such a case a careful study of mass and detail suitable to the material and an intelligent use of color in joints would accomplish a most dignified and attractive result.

Abraham Lincoln's remark about people might apply equally well to brick. He said, "God must have loved the common people, he made so many of them." Are not burned clay products almost the universal building materials? Our wheels do not skid so badly on brick pavements, our walks are often laid of brick, our buildings have foundations of hard vitrified brick, the walls above are of brick, the floors and partitions of hollow tile and the whole is crowned with a tile roof, a complete and beautiful structure which needs no repairs and fears no fire. Even when the building shows a front of granite or marble in most cases we will find the body of the wall to be of brick. This, in the case of a severe fire, is the only part to escape destruction. Would it not be much better to use the one material throughout, thereby gaining in honesty of construction, strength, durability and artistic effect? The durability of brick is beyond question and the variety of color and texture is so great that it would seem impossible to devise more. The manufacturers, however, constantly studying for new effects, are every month surprising us with new varieties. It is now possible to obtain brick of a character to suit any style of architecture from the simplest cottage to the stately public building, and it is a waste of money to send abroad for costly stone when we have such an unlimited supply of a better material at hand. Let us hope that the near future will develop the use of brick to such an extent that a frame building will be as rare as a marble one is now.

REDUCING FIRE INSURANCE COST

By Warfield Webb

How to reduce the fire hazard and thereby reduce the insurance rate, is a matter for the earnest attention of each manufacturer or home owner. There are disastrous fires occurring almost every day in manufacturing plants, and these must be reduced by scientific methods, otherwise there can be no elimination of this evil that means much loss of life and property. A manufacturer engaged in any form of industrial development has ample reason for a careful study of this problem, from the fact that there is an element of risk in his undertaking that cannot be passively overlooked.

Some of the most common causes for disastrous fires in manufacturing plants are: defective building construction, poor wiring, lack of local protection and hazards poorly safeguarded. In almost all instances there are a greater or less number of these dangers, and the likelihood of fires increases with the lack of proper protection. The insurance fraternity has done much to reduce the number of fires, and likewise the rates on insurance, by an educational campaign conducted to instruct manufacturers and others in this respect. As it stands today the many must pay rates sufficient to make good the losses of the few. Insurance rates can only be further reduced by improvement in the matter of construction, intelligently planned in conjunction with other safeguards, to effect this hoped-for change.

There has been a continued cry on the part of property owners for reduced insurance rates, and still the number willing to make this possible by a higher regard for the matters above cited has been relatively small. The newer form among insurance companies is to make a schedule rating with credits for improvements made in each plant; these being the result of figures and facts gathered by the companies and tabulated showing causes of fires.

While there has been some improvement in the matter of construction, there are still a number of factory buildings being so erected, today, as to invite fires. The building laws, as a rule in this country, are far too lax, and permit of flagrant and open opportunities for fires. What is termed slow-burning construction, buildings with four-inch floors, heavy posts and beams of steel, or some other material that is fire resisting, hollow clay tile floors and partitions, brick shafts encircling elevators and stairways, with fire doors on each floor, are taking the place of structures with thin floors, open stairways and mark a step forward in this movement.

All plants which contain combustible material, such as woodworking shops, and many such are compelled to carry, should be so arranged as to prevent the spread of a possible fire, with fire walls, having at the same time automatic fire doors between all sections opening into each other. Such protection has and will be the means of materially reducing the loss in many instances. It is the arrangements for checking the fire that do much to minimize the loss in plants of this kind.

The ideal plant is of the type known as "fireproof" construction. This is built with materials that will resist the flames in such a manner as to make the loss trifling. Following this there is the "mill," or slow burning type of structure. This has the four-inch floors, and heavy wood posts, and beams. The interior is finished in either whitewash or cold-water paint. The windows are of wired glass in metal frames, which materially reduces the loss in the event of a fire in your own or an adjoining plant. With such construction there is a reduced rate of

insurance easily obtainable, and this becomes a factor in itself of the highest importance to the owner.

One of the most salient features for the consideration of the plant operator is the sprinkler system. Where this system is installed, there is not only a considerable saving in the insurance rate, but the protection it guarantees is of the most desirable kind. There was formerly objection to this type of protection on the ground that it increased the loss on account of the water damage.

Still other reductions in the rates are being procured by installation of thermostatic fire alarm systems, and central watch service. These additions to the plant equipment make it possible to secure a reduction in the insurance rate, and at the same time increase the protection to the operator. Then there is the chemical fire extinguisher, so invaluable to every plant.

One of the prime causes for fires in most plants is the careless handling of waste material. Some plants are exceptions to this rule, and where such customs obtain you will note the difference in the entire operation of the same. Not only to the plant proper does this apply but to the lunch rooms and lockers as well. Paper and waste material from the former should be placed in metal covered cans, and in the more modern plants the clothes lockers are of metal construction. If the waste material is properly cared for the likelihood of loss is greatly reduced.

There is much information to be gained by every manufacturer who wishes to investigate the matter of insurance and insurance rates, and he can learn many things of value and profit by consulting his insurance broker if he wishes his plant more carefully protected, and wishes to have his insurance rate reduced. The subject is well worthy thorough study and consideration by all owners of buildings and those contemplating the erection of homes or business houses.

PLANT RE-ESTABLISHED.

A new sewer pipe and tile company, about to be organized under the name of the Marshalltown Vitrified Pipe & Tile Co., at Marshalltown, Ia., will put in an up-to-date one-press outfit in a factory recently owned by the Red Wing Union Stoneware Co. The machinery is to be furnished by Taplin, Rice, Clerkin Co., Akron, O., on a contract awarded last May and is nearly ready to ship. Warren Overpack, of the Alberta Clay Products Co., Medicine Hat, Alberta, is the prime mover in the concern.

ANOTHER VICTORY FOR BRICK.

A new City Hospital is to be erected at Louisville, at a cost of \$1,000,000. The Louisville Building Brick Ass'n. understood early in March that the cement people had apparently succeeded in convincing the committee to build of concrete, and suggested that a letter be written from this office regarding the superiority of brick.

A very vigorous letter was therefore written accompanied by literature setting forth arguments for brick as compared to concrete, this being supplementary to the efforts of the local association.

We are now advised by the building committee that the buildings will be constructed of brick. This apparently is a sweeping victory for the co-operative effort of brick-makers and owing to its magnitude is of great importance and significance.

WHEN IS A FIREPROOF BUILDING FIREPROOF?

Burned Clay the Only Safeguard of the Modern City Against Total Destruction Under Certain Contingencies—Why Croker Quit

By Allen E. Beals

"Two nines," tapped off on the electrical signal in New York City's palatial fire headquarters, means that every apparatus in the two hundred and fifty firehouses in the great city moves. "Four nines," means that every piece of fire fighting machinery must respond to the alarm.

"Two nines" have been rung in only twice, in the history of New York. One was in the great fire that swept the lower manufacturing section of the city, way back in the thirties, and the other was when Dreamland in Coney Island burned down the Sunday before last Decoration Day.

When it is stated that Coney Island is nine miles from the heart of New York, it is almost inconceivable that a blaze such a great distance off would necessitate the shifting of firemen and equipment over the entire city, and so it is natural to wonder why this is necessary.

It is because New York City is one of the worst fire traps in the country. Former Chief Croker of the fire

He smiled for an instant, but just when I was about to answer him he shook his head and said:

"Yes, of course, we hurry up so as to save life. A minute counts like an hour at other times. The man, woman or child that is clinging to a red hot ledge, high above the street, with the mob yelling not to jump, finds the seconds like whole minutes and the minutes like agonizing hours even during the two and one-half minutes in which we can hoist a 100-foot ladder from the street to that precious perch. No, that is not all. There is even a greater danger. The man up there represents only one life. If that fire once got ahead of our ability to check it, there would be millions homeless and billions of dollars lost, because the finances of a nation could never be sufficient to back the insurers of the whole city of New York in paying the losses on a city of this size laid waste."

He said the same thing was true of every large city.



Typical Fireproof Terra Cotta Panel with Life Size Figures, which Decorates the Exterior of the Delbrade Museum of Art, New Orleans, La. Made by the Northwestern Terra Cotta Co., Chicago, Ill.

department told me so only recently. "Once a fire gets a fair start in this city, famous conflagrations of the world's history will be as a bon fire when the life and financial losses are computed," he said.

That seemed to me to be the height of radicalism, but to expect anything but the sanest kind of conservatism, from a man who has fought fires in the Empire City for almost a third of a century, and most of that time as commander-in-chief of the great army of heroes comprising the ranks, would be in itself out of all reason. He clenched his fist on his plain, flat-topped desk in his offices with the National Fire Prevention Association as he said:

"Here is a letter which was written by somebody to the editor of our paper. He complains because the drivers of fire apparatus drive too rapidly through the streets in responding to an alarm. Did you ever stop to think of the real reason why we have the right of way through the streets? Did you ever stop to think why the speed law does not apply to us?"

It was natural to ask how such a fire could sweep through a city built of stone, terra cotta, steel and brick. "Fireproof" is a term that has been applied to modern buildings, but it is a misnomer.

"Is not a fireproof building fireproof?"

The world-famous firefighter did not answer that question directly. This is what he said, however:

"When I heard that 'three-alarm' come over the tapper that Saturday afternoon when the Asch building burned, I had no idea of quitting the department. I jumped into the car and went to the blaze just as I had gone to hundreds of other three alarms. But when I turned the corner into Washington square and saw the air full of human bodies plunging out of the tenth story of a fireproof factory, I resolved right then and there that 'fighting fire' was not my work. My duty lay in preventing it."

The chief is now chief counsel of the National Fire Prevention Association and his experience as a fire fighter has been the means of accomplishing great things already in the cause he is working for, namely, the application of

scientific principles in construction, and in the exercise of approved systems of checking fires in their incipency.

It has probably been inferred that the fireproof building is not fireproof after all. A kitchen range may be said to be fireproof. So it is in reality. It confines the fire within, unless the fire gets too hot. So it is with so-called fireproof buildings. They are fireproof until the fire gets too hot for them. The Building Department reported that the Asch building was fireproof. Such was actually the case as far as confining the blaze to one floor was concerned, but in that floor were 200 operatives and only fifty-seven of them are alive today.

A building is, strictly speaking, fireproof only when the structure itself, all that it contains and all its equipment is proof against fire.

The tourist who approaches Manhattan from the Narrows marvels at its greatness. For hours before he arrives even at Quarentine he has viewed through his spy-



Splendid Example of a Fireproof Terra Cotta Capital.

glass thousands upon thousands of buildings of one sort or another. Finally he gazes upon what is called the Billion Dollar Mile, or the skyscraper area of Manhattan. His vision rests upon approximately \$730,000,000 worth of invested capital, a large proportion of it represented in brick, steel and what he thinks, stone, but 85 per cent of the visible structures in that mile represents clay products and 93 per cent of all the other buildings he has seen are built of brick. Surely, he sighs, New York is impregnable against fire. Fire could never devastate such a magnificent pile as that. He argues that there is nothing there to burn, yet he little realizes that the safety of even the dock upon which he is to disembark, rests upon the speed with which the firemen reach the small, insignificant blaze in the cellar half a hundred feet below the sidewalk.

Even at this writing New York City, with all its \$7,000,000,000 of assessed property, faces a menace from fire that is a serious problem to city officials. Without water a great city cannot adequately fight its fires, and Chief Croker said that the city is liable to have a conflagration at any time.

It is a question, therefore, what constitutes fireproof construction. No less an authority than Ernest Flagg,

the designer of the Singer Building, holds that the perfectly fireproof building cannot exist if the cost of fireproofing is made prohibitive. He believes that the fireproof building is that which makes the lives of the inmates absolutely safe from fire.

"Take the present building code," he said. "How many paragraphs are required to define a fireproof building? And, after all, do they define it? Not at all; for no building can be said to be fireproof which is partly composed of inflammable material.

"Why not cut the Gordian knot at once and say that a fireproof building is one in the construction of which no wood or other inflammable material may enter? If this were done many other paragraphs in a code could be omitted, for if there is nothing in the interior to burn the interior will not be exposed to fire. Unless it were used for the storage of inflammable material, the metal columns and other parts would not need to be protected from fire and the money thus saved could be devoted to protecting the exterior of the building, thus guarding against the spread of fires originating in neighboring buildings.

"Let us then reduce the cost of fireproof construction to the lowest possible figure and make the use of wood in buildings in our great cities so prohibitive that it will be cheaper to build fireproof structures than the other kind."

This would appear to offer a special opportunity to use clay products, if low cost is to be the key to the fireproof city, because burned clay fireproofing is considerably cheaper than stone or composition or steel and it cannot be destroyed by fire because it is of itself the product of high temperature, earth, air and water—the three fundamental elements of existence in unison.

Less than one-half of one per cent of all the buildings in New York City are fireproof in the strict sense of the word.

When the Fifth avenue building was erected on the site of the famous old Fifth avenue hotel at Broadway, Fifth avenue and Twenty-third street, the fact was widely heralded as a great engineering and construction feat, that not a single piece of inflammable material went into its construction. It was said to be one of the few buildings in the city that was absolutely fireproof. But this magnificent building is almost entirely surrounded by non-fireproof buildings, many of which are stores filled with highly inflammable material, and if once a fire gained the victory over the fire men even this costly pile would be gutted because its contents are not fireproof, although an attempt is made by its management to encourage the use of metal furniture as far as possible in the offices.

The menace to the city from so-called fireproof buildings can be better realized when it is stated that in the Great Hudson Terminal buildings, covering practically two square blocks in the heart of the skyscraper district and, to all intents and purposes fireproof as far as exterior and public interior construction is concerned the offices are floored with wood and wood enters largely into its construction. There are hundreds, if not thousands of such buildings in New York. True, the wood used in structures of the calibre of the Terminal buildings, has been fireproofed, but the permanency of this process and its real effectiveness in a hot blaze has been seriously questioned by competent experts.

The experience of great cities which have been visited by conflagrations is that even granite is not proof against the power of fire. Under great heat and sudden cooling by high pressure water it will calcine, and since crushed granite and trap rock are lime-bearing materials, their use in concrete is not a guarantee against crumbling in-

der great heat. The expansion and contraction of metal reinforcement tends further to demoralize the structure when subjected to high temperature.

Under these conditions it is small wonder that the Board of Aldermen in New York City in their efforts to draft a building code, are practically unanimous in their contention that hollow tile floor construction, partitions and beam, girder and column protection be officially approved and required in all cases of fireproof construction.

The new code has not yet been approved and allegations are being made that political affiliations are responsible for the delay. The concrete interests are making a determined effort to have their system of fireproofing approved, but so far the city fathers have adhered rigorously to their determination to give New York burned clay fireproofing.

Modern methods of fireproofing are inadequate unless there be some supervision regarding the nature of the contents of a building. The fire in Alwyn court, the million dollar apartment house, a year ago, started in a fireproof room, but the contents of the apartment were so inflammable as to permit the flames to actually sweep out of the windows and through the wired glass windows of the floor above and spread, in that way, to many other apartments.

What chances would a thousand occupants of a forty-story building have if such a thing were to occur in the business section of the city? They would be caught like birds in cages far beyond the reach of help from the street.

When New York's water supply runs low the city trembles. New York trembled more than it ever did, only a few days ago, when the fact was made known that its high pressure service installed at a cost of hundreds of thousands of dollars to protect the warehouse and skyscraper district was dependent upon the regular fresh water supply of the city instead of drawing its supply from the waters of the rivers and bay which surround the island. New Yorkers have been careless about putting up fireproof buildings because they realized they had a good fire department and believed that the high pressure supply of salt water was inexhaustible. It probably is for carrying off the sewage of a great community, but not one gallon of it is used for fighting fires.

The department in charge of this matter announced the fact as though everyone understood it. It proved a revelation to many property owners. The city explained that salt water surcharged with 32 per cent of solids would ruin the pumps and put the costly service out of commission within a year. The health department objected on the ground that the drying of this water would have a serious effect, by reason of the residue left behind, upon the health of the city and the salvage companies complained that bay water would mean a total loss for everything the water touched.

This fact may explain the vast increase in the number of fireproof buildings being erected this year. For the last five years the percentage of fireproof buildings has been about 2 per cent of the whole, according to Building Department statistics, while the percentage within the last two months has shown a jump to 12.

Insurance companies are encouraging this type of building even among residences, in some cases allowing 10 per cent off the regular premium. Hollow tile is being used everywhere, even in the suburbs in speculative construction. The day will come when municipalities will insist upon its use for partitions, flooring and metal covering in all buildings and the cheapness of architectural terra cotta over other facade material will make its use

first choice on grounds of economy and efficiency in all types of building.

We have had our ice age, our stone age, our iron age and our cement age. The building world is just beginning to re-enter after thousands of years, a clay age, but that era will be the harvest of science. Modernity sweeps aside the untried. It is impatient of experiment. It demands the tried, the true and the proved. The safety of the city depends upon the safety of the building unit and the unit cannot be proof against the ravages of flame until an absolutely unburnable material is used in its construction. This cannot be attained until the cost of fireproofing is placed within the reach of all so that it cannot be considered a luxury by any one.

AN INTERESTING BIT OF BRICK WORK.

Out at Clover-nook, north of Cincinnati on the Miami river,—famous as having been the birthplace of the Cary sisters, the poetesses of childhood,—there remains an interesting survival of early brick-work in the United States.

This is a series of rounded brick pillars, which have weathered almost a century of storms. When Clover-nook was built, Mt. Healthy, now a suburban town, was



Brick Pillared Porch at the Home of the Cary Sisters, Clover-nook, Cincinnati, O.

not in existence, and Cincinnati, the nearest settlement, was distant indeed. So brick were made on the premises, in shapes suitable for the special use for which they were intended,—hence, these old pillars have a certain perfection of form, not ordinarily to be found among the brick columns of the older sort, in the Midland and are the cause of considerable comment from the many visitors to this historic spot, which is sacred to the memory of the much loved Cary sisters.

The American School of Correspondence has issued as a part of its course of instruction in architecture and building, a text book on the subject of fireproof construction, prepared by the well known consulting architect, F. W. Fitzpatrick, of Washington. This book is one of the most complete and instructive publications on this subject which has yet been produced and would be of great interest to anyone connected with the building trades.

INDUSTRIAL POWER

Stockton Fire Enamel Brick Co. Uses Electric Drive to Operate Plant—Oil is Used for Burning

The plant of the Stockton Fire Enamel Brick Co., which makes a specialty of glazed and salt glazed brick, is located on the outskirts of Stockton, on the Southern Pacific & Western Pacific Railroads. Two spur tracks, about 1,000 ft. long, run from the S. P. line to the works, the raw material being brought in on one track, and the finished product sent out on the other.

The clay, which is said to be as fine as any obtainable in California, is brought from Lincoln, Placer County, about 70 miles distant. It is dumped from the cars and then shoveled into a dry pan, belt driven by a 35 h. p. motor of the squirrel-cage type, where the clay is ground until it is like powder and then dropped through a screen in the bottom of the dry pan and caught up by a cup elevator driven by a 5 h. p. General Electric induction motor, carried to the top of the building and dropped onto a screen, through which it passes into a number of bins placed about 20 ft. below. From these bins the ground clay is conducted through a pipe to the pug mill, where



Induction Motor Driving Dry Pan.

it is mixed with water and sand, in such proportions as to give it the proper consistency.

The pug mill is driven by a 25 h. p. induction motor. From the pug mill the mixture passes down a chute into the brick machine on the ground floor. A 75 h. p. induction motor drives this brick machine. The compressed clay is conveyed from the brick machine by a belt to an automatic cutting table on which the brick are cut by wires and are then conveyed to another department, where they are dipped in the glazing solution, and then taken either to a drying room, or allowed to dry in the sun. After being dried they are again dipped in the glazing solution, and are then taken to the kiln to be burned.

It is interesting to note that the brick require only one burning, contrary to the practice at various other factories on the Coast, where two burnings are required. The special glazing which this company uses, makes it necessary to burn the brick but once. Each of the four kilns has a capacity of 60,000 brick, and is heated by means of oil to a maximum temperature of about 2,000° F.

Power is taken from the Pacific Gas & Electric Co. at 2,200 volts, 3-phase, 60 cycles, and transformed down to 3-phase, 440 volts by means of 3-phase, 20-kw., oil-cooled

transformers. These transformers take care of the average load (60 h. p.) easily, and if the maximum horsepower capacity of the plant (150 h. p.) is used,—which occurs very rarely—the transformers must carry an overload.

The plant has been in operation for six years, and dur-



Induction Motor Driving Brick Machine.

ing that time the only repairs to the motors have been the replacement of new bearings and a few minor adjustments.

All of the electrical machinery is of General Electric manufacture, and the brick and clay machinery was made by the American Clay Machinery Co. The installation of the electrical apparatus was made by the Electrical Engineering & Supply Co., Stockton, Cal.



Induction Motor Driving Pug Mill.

TERRA COTTA MAKER DIES.

William C. Hall, formerly vice-president and general manager of the Perth Amboy Terra Cotta Co. died recently in his fifty-sixth year, of paralysis, at his home in New York City.

Try a Want or For Sale Ad in "Brick and Clay Record."

THE FIRE WASTE

Portion of the Address of Hon. Walter L. Fisher, Secretary of the Interior, Before the National Fire Protection Association

If the Government should suddenly lay an annual tax of \$2.51 on every man, woman and child in the United States on a promise of spending the money for some useful purpose, that promise would not avail against the storm of protest which would be aroused. Nevertheless, a tax which in the aggregate amounts to that is being paid by the people of this country. It is the annual fire loss of the nation upon buildings and their contents alone. It is expended not in productive enterprise, but in death and destruction, and an even larger sum is annually expended upon fire protection and insurance premiums. Not only is this property loss paid by our people, but, in addition, annually 1,500 persons give up their lives, and nearly 6,000 are injured in fires.

The most comprehensive statement of the conditions as they exist in the United States, of which I have knowledge, is contained in Bulletin No. 418, entitled "The Fire Tax and Waste of Structural Materials in the United States," published last year by the Geological Survey of the Department of the Interior. This bulletin states that "The actual fire losses due to the destruction of buildings and their contents amounted (in 1907, the latest year for which statistics are available) to \$215,084,709, a per capita loss for the United States of \$2.51. The per capita losses in the cities of the six leading European countries amounted to but 33 cents, or about one-eighth of the per capita loss sustained in the United States."

But this is not all the loss. The Geological Survey bulletin goes on to say that in that year the total cost of fires, excluding those of forest fires and marine losses, but including excess cost of fire protection due to bad construction, and excess premiums over insurance paid, amounted in one year (1907) to more than \$456,485,000—a tax on the people exceeding the total value estimated for the gold, silver, copper and petroleum produced in the United States in that year.

Here in New York recently we had the horror of the Asch building fire, with its apparently needless sacrifice of human life. At Albany, the fire in the capitol building robbed the state of many of its records. Last year in Chicago, twenty-five professional firemen, including the chief, lost their lives in the discharge of their duty. Thirty people were killed in a burning factory at Newark, N. J., and a dozen in a furniture fire at Chicago. Before this were the men sacrificed in the mine at Cherry, the children in the school at Collinwood, the people in the hall at Boyertown. One thousand perished from the disaster to the steamer "General Slocum," and nearly six hundred, mostly women and children, were suffocated at the Iroquois Theater in Chicago.

I do not doubt that the average intelligent citizen of the United States is aware of the fact that fires in America are comparatively frequent. He undoubtedly appreciates in a general way that a large percentage of our fires are from preventable causes, and that the sacrifice of life and property through loss by fire is, much of it, needless. What he does not fully realize is his own duty, and the duty of city, state, and nation in the premises. He understands as yet but vaguely the significance of that change of public sentiment which has made of the movement for the Conservation of our Natural Resources a broader and deeper movement for the Conservation of our National Resources. He glimpses but dimly how

great an obstacle to human progress and to human happiness is needless waste, whether it be in the use we make of the products and the forces of nature, or the productions and the energies of men. If the justification of private property is that it tends to promote the common good through increased energy and increased efficiency, which is the antithesis of waste, then the broadest application of the principles of conservation should extend to our created as well as our natural resources, for in the last analysis the loss by fire of a city building owned by an individual will be just as important to the people of the United States as the loss by fire of timber in the public domain. Both the building and the timber are assets of the nation. If they are destroyed these assets are wiped out. No system of taxation will serve to bring them back, whether this tax be collected by the constituted authorities under the law, or collected by private interests as premiums on policies of insurance. Rebuilding a dwelling house, or a business block, or the business district of a city, costs money, a large proportion of which under insurance methods is assessed against property which has not burned. It is the people who pay, whether they own land or buildings or other things of value. It follows thus that the question of fire waste is of direct pecuniary interest to every citizen. Beyond the individual pecuniary interest, there is also the obligation of each citizen to his fellows to so protect his property and conduct his affairs as not to endanger the lives and property of his neighbors.

The United States Government is the owner of buildings costing more than \$300,000,000, and is spending each year more than \$20,000,000 in new buildings. It is the policy of the Government not to insure its buildings against loss by fire, but to reduce the risk of fire. Did it insure, its annual premium would amount to more than \$600,000. Calculating that it can take no unnecessary risk in these buildings, the Government, through its scientific bureaus, has made searching investigation into the combustible character of materials for use in construction work, and these investigations have not only been of immense value to the Government but, as their results are free to all, have benefited the whole country.

To state them briefly, these results have attracted attention to the necessity of developing cheaper fireproof materials, so that property owners may be encouraged to construct buildings that will better resist fire, and they also have shown the necessity of better building codes in cities, and especially of a better enforcement of the codes already enacted if the present great fire losses are to be diminished. Investigations point to the fact that fireproof buildings will be constructed at less expense in the future than in the past, and that the difference in cost between fireproof and inflammable buildings will soon cease to be an encouragement to flimsy construction.

The Baltimore conflagration and the San Francisco disaster gave an impetus to the movement toward fire protection in cities, where possibly we are relatively weakest of all. I understand that the National Board of Fire Underwriters has spent several hundred thousand dollars in sending corps of experts to report on the conflagration conditions in all of the larger cities, and has followed the work up by reports on many of the smaller. In these reports we naturally find prominently mentioned the necessity for adequate building laws, rigidly enforced.

High pressure water systems for fire services have been installed in several of the larger cities, and have proven successful in a measure. I notice that some engineers are suggesting that the abnormal water damage sometimes occasioned by the use of these systems could be minimized by extending the systems to connect with building equipments, thus bringing the source of water supply either to or adjacent to the seat of the fire. Ordinances for safeguarding explosives and combustibles have been adopted in some of the cities. Investigations which have been made by the National Board of Fire Underwriters have focussed attention on one of the sources of failure, and that is, partisan politics in municipal fire departments. Wherever the tenure of office of responsible heads of city departments of public safety is not dependent upon election returns, the best results seem to have been achieved. In other words, where appointments of fire chiefs and fire marshals and firemen are dependent on merit rather than on political contingencies, the public receives a larger measure of protection.

It seems ridiculous that a people so apt and so eager to seek out and destroy the mysterious and hidden enemies

it will not diminish our obligations for your effective and public-spirited leadership.

OGAN KILN AT FT. SCOTT.

The accompanying illustration shows the new Ogan continuous kiln in construction for the Ft. Scott (Kan.) Paving Brick & Tile Co.

This kiln will cost about \$13,000, and will have a capacity equivalent to a production of 50,000 brick per day. It is operated on a new principle by which the fuel is transformed into gas, making the kiln the combustion chamber instead of the firebox.

Mr. Geo. Ogan, the manufacturer of the kiln, whose address is Danville, Ill., claims that his style of semi-continuous kiln saves one-half the cost of fuel and labor, and is cheaper in construction than kilns of equal capacity of the round or rectangular down-draft types. The Ogan kiln can be built to any capacity, or to suit any locality or condition. It is a compartment kiln and each chamber can be built to hold from 15,000 to 70,000 common brick or its equivalent in tile. Mr. Ogan claims that his kiln is especially suitable for burning paving brick.



Various Stages of Ogan Kiln, Being Built at Plant of the Ft. Scott Brick & Tile Co.

of mankind, should be so slow and sluggish in fighting a foe so plainly in sight and so readily vanquished. We have led the world in seeking out the causes of pestilence and removing them. We are in the very vanguard of the battle against tuberculosis, typhoid and yellow fever, and still we stand apart and let the older nations lead the fight against an enemy much more easily conquered.

To arouse the people against the fire foe is our task. If there were any dispute as to the facts, if anyone opposed a movement to check the fire loss, the American people might more readily become partisans of this movement which you are leading. But there is no difference of opinion regarding the essentials. The average American citizen would admit that our fire waste is in the nature of a national disgrace. The task is to make him do something to remedy conditions. You must popularize your movement, and create a general demand for adequate laws and thorough enforcement. To relieve the people of the unnecessary burden which they are now carrying, you must teach them the importance and the significance of that burden. You must show them the necessity for a defence against this common enemy. Organized methods must be adopted for bringing the significance of the fire waste before every person who will read the written word or listen to the spoken one. Let the people once realize the exact facts of their own negligence, and they will be swift to provide the remedy. If, in the resulting benefits, the underwriter of fire insurance will share with the public at large—a feature which this Association has been far-seeing enough to understand—

A DAY AT TERRA COTTA.

The Chicago Architectural Club feels greatly indebted to Mr. W. D. Gates for the splendid outing which the club enjoyed as the guests of the American Terra Cotta Co., at Terra Cotta, on Saturday, July 15.

More will be said of this occasion in our next issue and we will simply note at this time that the program of entertainment consisted of every known game or contest and several heretofore unknown, the list of events including such variety as an air ship race, pie eating contest, checkers tourney, sleeping contest and a skating exhibit.

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CONSIDER BRICK FIREPROOF

Use of Burned Clay Floors Will Make Building Absolutely Incombustible

The following strong arguments in favor of the use of brick appeared in a recent issue of the "Louisville (Ky.) Herald" which is doing excellent service in the brick advertising campaign.

No man builds without counting the cost. Beauty he may wish; but cost comes first with all excepting a few multi-millionaires, who generally use brick anyway.

It may be that the pocketbook limits the dwelling. It may be that the "limit that is salable" in the surroundings of a suburban development fixes cost; or the tenement investment with a limit of known rentals; or the limit on a factory to house a business that must show a profit. "What Do I Get and at What Price?" comes first when the plan is made.

There are but two classes of construction available, inflammable and fireproof. The popular impression that wood makes the cheapest houses is a great error, as has been shown. The first cost, be it high or low, does not affect the basic principles, and here are examples of these principles from life.

A certain suburban wooden house, within twenty miles of New York City Hall, well-known to the writer, in thirteen years had cost \$1,250 for repainting and repairs. If an attempt were made to duplicate the selected wood of which it is built, it would cost far more than \$10,000 to rebuild it today. A contractor offered to duplicate its plan and fittings in the modern flimsy form of construction for \$7,500.

When offered for sale the house was appraised at \$6,200, a heavy loss, because "the surrounding houses are so much newer and more salable that you must sacrifice to effect the sale." This was in spite of the present high price of the lumber that would be required if the house were to be duplicated. Without a thought of the significance of the truth stated, the real estate experts who appraised the property—there were four of them in conference—said: "You know everybody expects a house of that age to cost more and more every year for repairs."

A block up the street stands a brick dwelling that is a little older.

Two hundred dollars doubtless has covered the cost of paint for window frames and sashes, blinds, etc. The walls are more beautiful than when new, though no fancy brick were used; and the building is valued by the same men at an advance in price instead of a loss, because the house has not "gone out of style"—no brick house does—the exterior is "as good as new" literally, the interior lumber has not suffered from deterioration, while today it would also cost much more to replace and the new house would be no better than the old one.

Both houses have been carefully "maintained" by the owners. The lesson lies in the fact that the brick house would not deteriorate if looked after, whereas the wooden walled house could not be prevented from deterioration even by the owner's best care.

However much the relative cost of brick and wood may vary in different localities, this basic principle is true, practically everywhere. The first cost and maintenance of a wooden house exceeds, sooner or later, the first cost and maintenance of a brick house.

Which building can you best afford to erect or own?

But there is more than this to consider. Every day the resident in the brick house enjoys advantages and economies denied to his neighbor in a wooden dwelling.

Consider the item of heating. A certain solid-built house required only ten tons of coal in the furnace last winter at \$6.25 per ton, or \$62.50 for the season; and every room was comfortable on the wildest days of cold and wind. Next door, in a wooden house with only three-quarters as many cubic feet of air space to heat, they burned fourteen tons, costing \$87.50, and on windy winter days they huddled in one room, the only warm one in the house, meanwhile sleeping and dressing in almost icy bedrooms.

Besides that, the plumbing was frozen twice. The plumber's bill is not on record; but he had to replace some of the porcelain fittings, as well as pipes, and certain rooms need redecoration very much.

There are several kinds of economy in the brick house.

These features are represented to the landlord of a brick dwelling by increased rent. Who will say that the tenant does not get more than his money's worth of comfort for the small extra sum he pays? The coal bill's reduction helps out. One illness avoided would more than counterbalance the entire debt his brick rent represents.

Also, the landlord, however indifferent to illness, discomfort or coal bills, does have an interest in the frozen pipes, with their plumbers' charges, the painter and the job carpenter who so often visit the all-wood structure. He has the same interest in insurance costs that you feel who own your own home or insure your household goods. Ask your insurance broker how this matter stands. It is different in different places, and is affected by other considerations; but, in general, brick buildings cost very much less to insure, which means that the likelihood of you and your dear ones being burned up on very short notice is much less.

There is such a thing as negative virtue, and much of the virtue of a brick house lies in the fact that it is not, so many things which a frame house is. The argument is largely a list of the shortcomings of the wooden house.

Fire may start in the material lying in any building. But, given three wooden buildings in a row, or close together, as in villages, the middle house is exposed not only to its own chance of fire, but also to the fire risk of both the others—three times the risk of a brick house, which is not readily attacked by fire from the outside, standing in a similar place.

A recent conflagration illustrates this forcibly. On the one side stood a brick-walled building, to which no one paid much attention, because it could not even be scorched. On the other side was a wooden-walled dwelling, which caught fire three times, was seriously damaged, and was vacated for six weeks during extensive reconstruction. The owner admits that the insurance company paid for the loss, but always adds that "they wouldn't settle the board bill at the hotel for my family of five people." The man in the brick house saved a few hundred dollars right there, and he knows it!

Fire in dwellings starts from flues or electric wires more often than from nearly all other causes combined, and that means it starts in the walls. A wooden house, therefore, ignites from joists, sheathing-planks, paper; which are so exposed that the upright joists, sheathing-planks and paper act as fire-conductors so that often the whole building is ready to burst into flame before the fire is discovered. This greatly shortens the period of possible rescue, and reduces the chances of

saving the house or its contents.

Even if you have never been routed out by fire at night, you know that a "quick" fire is an ever-present peril in every wooden home.

The brick-walled house has few conductors of fire, and those not "rapid." The flues between the floor beams are horizontal, and the ends are filled with brick; they are, therefore, draftless. The construction of partition walls is largely plaster and not so drafty as wooden exterior walls. Fire in a brick house ordinarily starts to burn in plain sight or smell, must be more quickly discovered, and is slow to spread, giving much more time to get the family out, to call help and save property.

When a brick building is destroyed by fire, it is because it is filled with wood and other combustibles. The brick work never burns, although it is sometimes injured by falling timbers, or is shaken down in the general wreckage.

By the use of wire glass in the windows and burned clay floors, a brick building can be made absolutely fireproof.

An interior fire in such a building is confined to the room in which it originates; no outside fire can attack it.

The measure of "fireproofness" of a building is determined by the proportion of burned clay in its construction.

MRS. SHAW AGAIN.

Every once in a while the Shaw kiln proposition pops up serenely appearing to have the characteristics of Banquo's ghosts—it will not be downed. The latest development is told in clippings from the various leading southern newspapers and according to these the brick business is to be revolutionized. Statements made are interesting, although the expression of "revolutionizing the brick industry" has something of a familiar sound, the Shaw kiln having been advertised to do this on several previous occasions, dating back over a considerable number of years.

Mrs. Shaw is certainly to be credited with perseverance and ability to interest capital and to the latter extent her kiln proposition has certainly been a success.

The newspaper clippings make some very astounding statements and among them we quote the following from the "Knoxville (Tenn.) Sentinel:"

"The recent visit to Chattanooga of Mrs. Shaw, of Savannah, exploiting a new process to manufacture brick and the fact that local brick men have under consideration the erection of a plant here to manufacture the brick, has created much local interest.

"Mrs. Shaw, who conceived this marvelous process, after perfecting the combination and securing all patent rights, had it inspected by brick experts from all parts of the United States, who have pronounced it a success in every particular. The experts are of the opinion that it will completely revolutionize the brickmaking industry.

"The first company was organized with a paid-up capital stock of \$250,000, the principal stockholders being Mrs. Shaw, Telfair Stockton, Mr. Robert Gamble, of Jacksonville, and Mr. Felder and Mr. Gray, of Atlanta. The style of the incorporated company is the Shaw Kiln Co. The main offices of the concern have been established in Atlanta, Chicago and New York, with numerous branch offices throughout the United States.

"The company has already under the course of construction two kilns, one for Hull & Co., of Savannah, which company is one of the largest brick manufacturing concerns in Georgia, and another for a firm in Athens, Ga., while several other large contracts have been awarded to build the Shaw kilns in various parts of the southern territory.

"According to the opinions of all experts, this process absolutely revolutionizes brick making, reducing the cost of manufacture from the time the brick leaves the clay pit until it is on board the cars ready for shipment from the old cost of \$1.75 to \$2.50 per thousand to 25 cents per thousand.

The "New Orleans (La.) States" presents the matter in an even more brilliant light as follows:

"That there are other spheres than politics in which women may shine is evidenced by the announcement that a southern woman has discovered a process by which brick may be manufactured in two days.

"The inventor is Mrs. Shaw. Under the present method it takes fourteen days to turn a completed brick out of the mould. Mrs. Shaw had an idea that the industry could be revolutionized if, through experiments with oils in which she became interested, heat of sufficient intensity could be produced to lessen the period of baking. She has finally succeeded beyond her most roseate expectations.

"The opinion of experts of the highest standing would seem to remove any doubt as to the durability of the brick. If their judgment is not mistaken, not only is Mrs. Shaw likely to reap very large profits from her ingenuity, but she has pointed the way for other women of the South to render greater service to their section than they could possibly hope to through the exercise of the right of suffrage."

The complete story of Mrs. Shaw and her kiln proposition would read like fiction and were we to tell the story in all its details, we have no doubt but what the issue containing the same would have largely increased sales. The story covers a period of over twenty years, New Jersey and Philadelphia capital having first backed her tunnel kiln idea. After the Eastern field had been exhausted, Mrs. Shaw changed her course of operations through the Middle West and eventually an experimental kiln was built at North Judson, Ind. Complications arose and in due time other parties developed the idea and much of the North Judson kiln was removed to Stillwater, Minn.

There have been conflicting reports as to just what the tunnel kiln idea accomplished at this place, but in the construction of this plant Mrs. Shaw took no part. The company which built this Stillwater kiln was later dissolved and since then Mrs. Shaw has become active again as is shown by the numerous newspaper clippings.

The tunnel kiln idea and the principle of moving the green ware on cars through a zone of fire is by no means new to the clayworking industry. The idea was first introduced in Germany, and many experiments along this line have been made in this country in addition to Mrs. Shaw's proposition. We have never been able to learn as to just what Mrs. Shaw's patented or patentable ideas consist of; in fact, we have been unable to learn that any patents have been issued to her. The oil burner used at North Judson and at Stillwater did not include any new ideas or principles and the kiln itself is a very simple affair.

The principal objection to the tunnel kiln idea lies in the fact that most products cannot be brought to the highest heat so quickly or taken out of the kiln so quickly as is required by this method, without such cracking or other injury as would cause too large a percentage of spoiled ware to make the proposition practical or the product sufficiently uniform.

APOLOGY TO MR. BROWN.

We regret to say that through an error, an editorial paragraph intended to lead the article by Mr. Harold P. Brown, appearing in our last issue, was embodied in his article and appeared to be a part of same. Mr. Brown treated the subject of electrolysis of concrete buildings in a very unprejudiced and open minded manner and he does not wish to be quoted as opposed to reinforced concrete construction, nor does he wish to have it understood that his report was in the form of an attack on or criticism of such construction. He has perfected methods to provide for the safeguarding of such buildings from electrical injury.

BRICK, TILE AND TERRA COTTA

Behavior and Care of Burned Clay Building Materials Under Various Conditions to Which They are Commonly Exposed

By Owen B. Maginnis



I have been requested to write something of my experience relative to the behavior and care of brick, tile and terra

cotta under various conditions, but as the scope of the subject is varied and wide it would require lengthy treatment to discuss it thoroughly. However, as the subject is one of great interest to all dealers, producers and users of ceramic materials, I will endeavor to give some facts which have come under my observation.

Commencing with brick, let us note, in their commonest form, what injuries they are most liable to and their characteristic action in different situations.

The first danger and test to which they are exposed is that incurred in their transportation from the yards where they are manufactured to their final destination, where they are to be built into chimneys, walls, pavements, ovens, etc., and in this transmission, apart from the action of frost or rain (which can be guarded against by covering) they are injured by impact in falls in handling, dumping from carts and wagons.

By reason of their fragility brick should never be dropped nor dumped indiscriminately, because they will not only break when they strike the ground but will be broken by their fellows falling upon them. In this regard it is noticeable that the percentage of brick broken or mutilated is much less in transferring from the boat or car to the dealer's yard than from the yard to the building or operation, for the simple reason that in the former case the brick are "handled"—not dumped. Much economy might be practiced in the latter case by more care in the cartage.

In conversation with several dealers, I learned that they or the yard foreman largely use their own judgment in this, yet I always find that the dumping process, especially if done from a height, as from the sidewalk into a sub-basement, means many "bats" of ill assorted sizes and shapes.

The finer class of this material must of course be handled, stacked and kept covered with paper, boards or tarpaulins, especially in a frosty temperature or wet weather. In fact during these times all building materials should be kept covered.

Stacks should be built within, if possible, the direct rays of the sun, to allow for drying out. Piles should be in loose rows not built edge to edge, to allow for a free circulation of air and they should slope on the outside surfaces. It is easier to load hods, carts or wagons from properly built piles than from piles dumped in masses, it saves stooping, also the men's muscles and time and allows of more rapid action, and when brick are being transported by the thousand at so much per I think the foregoing is worthy of serious thought, not

to mention the margin of loss to builders who must accept and use the material as delivered, especially when executing a time contract under forfeit, which is of necessity hurried. However they too make the best of the situation, and the bricklayers do the rest by adapting the "bats" to the bonding; nevertheless there is time lost in the whole procedure.

Terra cotta blocks, even the smallest, must be handled either individually or serially according to their size and the value of each. The smaller, such as partition block, may be thrown from man to man five or seven at a time, but the larger in lesser numbers, when decorative or molded singly. The last are best packed in barrels in straw, excelsior or sawdust to preserve the



Terra Cotta Gargoyle, Decorative Feature of LaSalle Hotel, Chicago.

delicacy of the artistic modeling from defacement or injury.

Hoisting by boxes and buckets is admirable, provided the placing is done with care. It must be remembered that the brittleness of terra cotta is a factor to be reckoned with existant as it always is. It being made

up of potter's clay, sand and colors renders it fragmentary so that block are easily broken. When set, as in fireproof floors, partitions and walls it is safe, yet here again another dangerous feature arises, and that is the pressure exerted upon it when built in conjunction with brickwork. Being hollow, the block in many tall buildings would be in no state to resist the superincumbent gravity of the mass above, so the voids are filled in and solidified with brickbats laid in cement. This precaution strengthens the block and enables them to resist any undue circumstance such as unequal settlement or vibration which would disturb the equilibrium of the building, yet we still unfortunately see much cracked terra cotta.

The preservation of brick, terra cotta and tiles is best secured with glazing or such mixtures as will render them non-porous and bonded and then set in cement mortar. I attribute the failure of many chimney tops, cornices, wall copings, etc., to imperfect bonding and the use of lime mortar. The last material dries out into a powder and runs under heavy rainfall, thus depriving the clay details of their coherence.

There is not much to be said about tiles. In the larger sizes, such as flooring, oven and pavement tiles, the great difficulty is cutting them to fit for edges, borders, etc. This is a delicate operation, and too much care cannot be taken in the process.

The life of a floor or paving tile depends entirely on the solidity of the underlying base, which should be stone or gravel concrete thoroughly mixed, dumped and tamped. Portland cement and good clean cinders make a good base.

The concrete must be allowed to set hard and solid before tilting and should be devoid of holes or pockets. If the base is springy, as sometimes happens in store or toilet floors, the tiles will become uneven, unsightly and perhaps broken. It is not safe to truck over tiling, nor to dump heavy machinery on it, without first protecting the floor with boards or planks.

Oven tiles break either from overheating or on account of flaws and foreign substances in the clay. For instance, the bursting of a pebble baked in the tile, which will occur under intense heat, will break it.

Wall tiles of the thinner class, for walls and wainscoting, also require a stiff plaster underneath. They are too often set on a plastered wall on wood which is springy and subject to jar and vibration so that the banging of a door will put them out of place.

All tiles should be thoroughly soaked in water before setting and laid on either a brown scratch coat or rough cast plastering. Cutting and dividing should be done by gently tapping with a keen, sharp chisel, the joints battered and kept level, plumb and true, the surfaces and edges straightened and the arrisses flush. Keying to be good is gained by rubbing to force out the air and ensure perfect suction. The beauty and utility of tiling is unquestionable, provided the setting is properly done.

So many of the lesser details of these important matters are either overlooked or slighted that the writer feels the foregoing comments are appropriate at this time especially when ceramic materials are so much a vital part of all modern building construction.

PROMINENT CLAY MAN DIES.

News comes from Carlstadt, Germany, of the death of Theo. Deykes Whitney, president of the Ludowici-Celadon Co., of heart disease. Mr. Whitney left Chicago on April 4 with his family on an extensive European trip.

ARE WE USING THE WRONG MATERIALS?

The following is from the San Francisco *Examiner*:

The alarming conditions developed in the concrete piers of our water front bring up even more serious questions than the safety of a few docks. They suggest that a large part of our investment in public works may prove to have been money thrown away.

The developments indeed bear out the criticisms of an engineer, writing last year in the *Technical World* his strictures on the readiness of American constructors to rush into the use of concrete where it is not a suitable material. Because it is especially adapted to certain kinds of construction, he says, they have jumped to the conclusion that it can be used for all sorts of construction, and goes on thus:

"Turning next to some curious accidents to piers and breakwaters, we find even the United States Government occasionally meets with concrete disasters. The Bureau of Yards and Docks, using their greatest care and their finest materials, built a concrete bulkhead around the Charlestown navy yard in Boston Harbor. In about seven years it was almost a total wreck. Some engineers said it was frost, but the bureau wisely ventured no haphazard explanation. In the harbor of Baltimore was built a pier with expensive concrete piling under it. And now the piling begins to be eroded or rotted just at the water's edge. This time the experts ventured that it might be city sewage or floating ice. In my own mind I am satisfied that neither frost nor ice nor sewage worked this havoc, for I have seen concrete piers, placed with the utmost care in water where frost and sewage never were known, which nevertheless after five years a chicken could eat with a relish."

Quite as alarming to San Francisco is the following extract from the same article:

"Turning from salt water to the inland, we find one of the principal uses of concrete is for drains and sewers. It seems an admirable material for such purposes—easily formed to any shape or size, and very cheap. Yet when the tile interests—the arch enemies of concrete sewers—wrote inquiries here and there as to how concrete sewers were holding out, they received answers from several laboratories and universities of standing, from Chicago, Ill.; Paterson, N. J.; Springfield, Mass.; Portland, Me.; Memphis, Tenn.—about a dozen principal cities in all—to the effect that concrete sewers were a dismal failure. A few years underground and the sewer acids and sewer gases reduced them to crumbling wrecks."

We have put several millions of dollars into concrete construction on our water front. We are building a \$4,000,000 sewer system mainly of concrete. And we have voted \$9,000,000 for harbor improvement, much of which has been expected to go into concrete and steel docks. If we are to lose our money and our labor, and the improvements that are necessary for the commerce and health of the city, it will be a most serious matter. We must go deeper into this matter than merely laying the blame on dead and gone contractors or on officials who have been retired to private life.

PLANT EXTENSION.

Bids have been made on extensions for the special fire brick plant of the Egle Brothers' Manufacturing Co. of Detroit, of which William Egle is president and George Zimmerman, secretary and treasurer, with offices at 169 Sylvester Street, Detroit. The extensions include a building three stories 20x60 feet, of brick and concrete, and adding two stories to a one-story building and installing a new elevator.

CLAY'S IMPORTANT PART

Chicago's Magnificent New Terminal Depot Displays Lavish Use of Modern Ornamental Brick, Tile and Terra Cotta

The growth and progress of Chicago are most noticeable in the magnificent new structures which have been erected during the last two years, the latest and perhaps most beautiful piece of architecture being the magnificent new terminal depot of the Chicago & Northwestern Railroad, located on West Madison street, just outside of the "loop."

While in outward appearance this structure seems to be of stone, yet in fact, it is a burned clay building and will stand as a lasting monument to the merit of brick, fireproofing and terra cotta construction.

The new station was designed by the well known architects Frost and Granger, and was built by the Geo. A. Fuller Construction Co.

who are interested either in fire resisting materials or in the possibilities of the decorative features in connection with burned clay.

The main exterior facing on Madison street is of granite, though the upper portions of this as well as some other sections, are of architectural terra cotta manufactured to imitate the granite so nearly as to deceive the beholder. The sides facing both Canal and Clinton streets are brick with limestone trimmings. The brick for these walls were furnished by the Hydraulic Press Brick Co., of Chicago, and are known as speckled gray, manufactured by this company at Brazil, Ind. The enamel brick, in the driveways at Washington, Randolph and Lake streets, are Tiffany white enamel and were supplied by the



Magnificent 25 Million Dollar Depot Erected by the Northwestern Railway Co., in which Burned Clay Products Are an Important Feature.

In the interior as shown by the illustrations clay products are lavishly used, including brick, terra cotta, tile and faience.

All the terra cotta used in the building was furnished by the American Terra Cotta & Ceramic Co. Green Grueby tile is used in the walls and that for the ceilings is from the celebrated Guastavino Company.

The first floor presents a decidedly classic appearance—the numerous sections of the ceiling composed of Guastavino tile are upheld by columns and arches of cream colored terra cotta, the walls being entirely of the Grueby tile in a soft mossy green.

As to its sanitary, fireproof and decorative effects there are few buildings that will surpass it. Embodying as it does the latest ideas in constructive art, and being constructed entirely of materials that will prove a bulwark against flames, it demands the consideration of all those

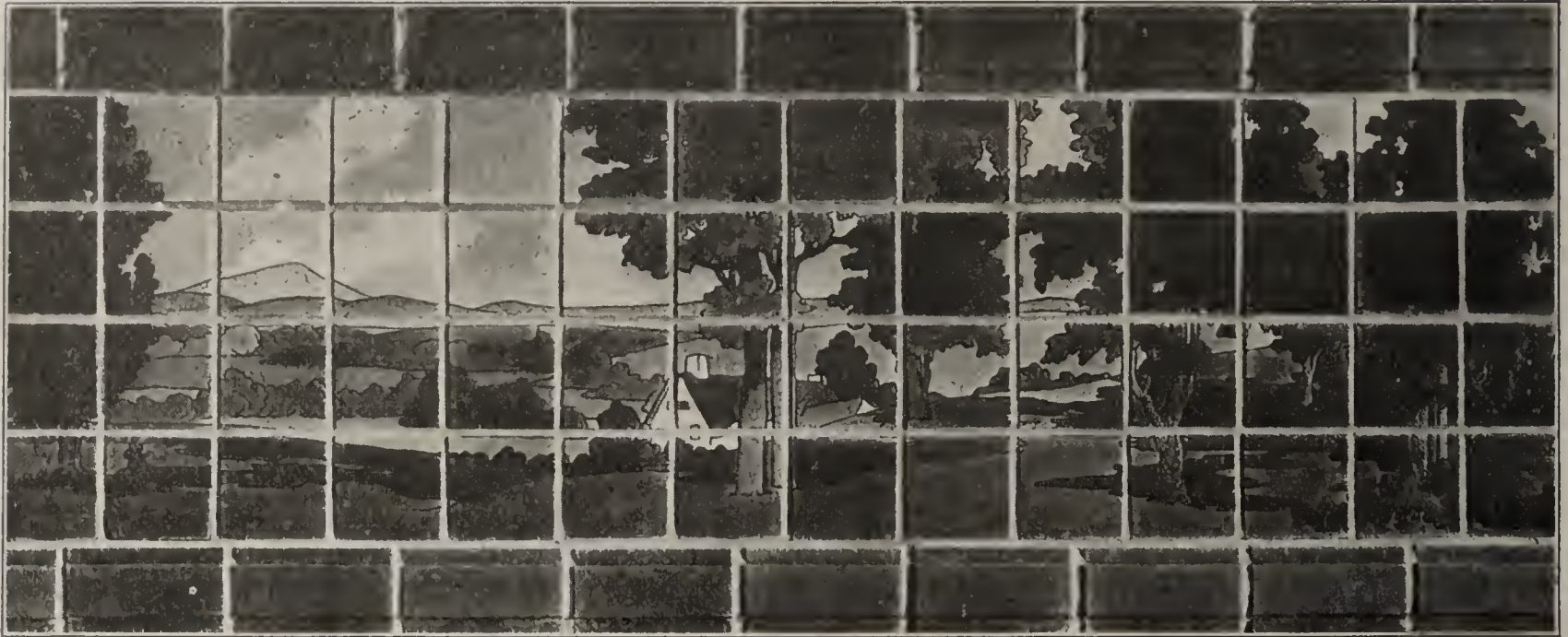
Thomas Moulding Co., of Chicago, also the white enamel brick in the emigrants' room and also in the boiler and engine rooms.

But it is to the interior that we must give our attention. Entering the public space we are greeted with beautiful effects in ceiling and wall tile, and elliptical soffit arches. The walls are of green Grueby tile, made by the Grueby Tile Co., of Boston, Mass. The arches of cream color terra cotta, made by the American Terra Cotta & Ceramic Co., Chicago, harmonize in a pleasing way with the ceiling of Guastavino glazed tile, which is a trifle lighter in color than the arches, and gives the whole a most artistic and decorative effect.

Up the concourse, as in the public space, one finds the large and stately columns of cream terra cotta, and the general trim encircling the beamed ceiling of the same material. The effect is inspiring and magnificent.

CHICAGO'S PRIDE

Interior of New Northwestern Depot, Showing Extensive Use of Fireproof Burned Clay Products



Section of Ornamental Frieze in Green Room of the Northwestern Depot.



Attractive Corner of the Public Space, Showing Lavish Use of Tile and Terra Cotta.



The Tea Room—Wainscoting and Decorative Frieze in Green Grueby Tile.



Public Space in the New Northwestern Depot, Floor of Art Marble Tile Made by the Art Marble Co., of Chicago, Columns and Arches of Cream Terra Cotta Made by the Northwestern Terra Terra Cotta Co., Tile Ceiling by the Guastavino Co.

The arches in the main waiting room are of polychrome terra cotta as well as in the side windows and soffits. Here also the green Grueby tile shows to advantage on the walls, and the color scheme adds wonderfully to the whole. Its very spaciousness is made more attractive by the effective treatment in burned clay, and the charm is noticeable from every angle. In the tea room one finds



Side Entrance of the New Northwestern Depot.

a frieze of green Grueby tile, and its effect is most pleasing and attractive.

The floors, with the exception of that in the main waiting room, are of art marble tile, made by the Art Marble Co., Chicago.

There is throughout the building fireproofing furnished by the National Fireproofing Co., Chicago, and this assists in rendering the building proof against the ravages of flames.

If we are to consider this as an ideal depot in so far as architectural effects, cleanliness, fireproofing and beauty are concerned, there is not an equal in any part of the country with possibly one exception. It is in many respects a work that demands the clayworker's attention. Clay products enter so largely into its features in a notable way that there is ample reason for clayworkers to take pride in this triumph of the builder's art.

STUDIES IN FIREPROOF CONSTRUCTION. TILES ON THE PORCH FLOOR.

As you step from the walk or lawn to the porch of your house the material that seems to be most natural for the covering of the floor is tile.

Tile is related to the earth. It is made from clay, subjected to tremendous heat until it becomes vitrified, but still its source is the earth. Therefore it is a natural connecting link between the house and garden.

There are only two reasons why you use wood for a porch floor instead of tile. One reason is that tile may never have occurred to you, and may not have been suggested by the architect or builder. The other is that you may think tile costs more than wood. The purpose of this article is to suggest that tile is not only an attractive material to use for a porch floor, but it is absolutely the best from every consideration and from every standpoint.

The idea that tile costs more than wood is true only as to the first cost. A tiled floor once laid lasts forever.

A wooden floor will wear out in a comparatively short time, exposed as it is to weather. A tiled floor requires no treatment after it is once laid. A wooden floor has to be painted and repainted more frequently than any other part of the house. A tiled floor offers more attractive colors than can possibly be obtained by the use of paint upon wood.

It is not only the color of the tile that is attractive; it is its texture. It is not only pleasant to look at; it is pleasant to walk upon. It suggests coolness in summer when porches are most used.

It has been used for the floors of porches, entrances, vestibules, loggias, and terraces from time immemorial. Tile is one of the oldest building materials made by the human race, and it is today one of the best.

A porch should be attractive. Its accessories should help to this effect. The cool, inviting texture of a tiled floor is one of the means to this end. The change from the house to the garden is made less abrupt by the use of tile, a material so akin to the earth.

Tile lends itself to every architectural scheme and offers a range of colors unequalled in any other material. A porch must be kept clean. It needs constant scrubbing. A wooden floor cannot be scrubbed as clean as a tiled floor, and it takes longer to dry. A tiled porch floor can be made absolutely clean. It can be flushed off with a hose any time. It is easier to sweep on account of its smooth surface.

If a porch has trees in tubs or flowers in boxes, there is no annoyance from water which may be left upon the floor. It will not do the harm that it would on a wooden floor.

The floor of the vestibule should be of the same material as the floor of the porch on which it opens. The same reasons that apply to tile for porch floors, apply to the vestibule floor. Even if there were no other reasons for using tile than that of its great attractiveness, this would be sufficient reason for the home builder, be-



Magnificent Stairway, Side Walls Lined with Grueby Tile.

cause it is one of the first qualities of a home that it should be attractive. But the attractiveness of the tile is one of the least reasons for using it. The greatness of its attractiveness is overshadowed by its wonderful utility. The human race would not have used tile for 3,000 years, if it had not been found very valuable for building purposes.

Roughly speaking, a tiled porch or vestibule costs from 40 cents upward per square foot.

SAVING FUEL

The importance of the burning question is not fully appreciated by the large majority of clayworkers. There are several reasons for this, one being that, years ago, wood was cheap and the habit of using fuel extravagantly became inculcated into the minds of the brick maker. It is only of comparatively recent years that economy in fuel has been given a moment's thought.

The artificial dryer was a creature of necessity outside of economical lines. The expense of drying was not given any particular thought because it was taken for granted open air drying was of course the cheapest method because the sun and air were free. The cost of the equipment and labor of open air drying was not considered at all and yet today many manufacturers find that the artificial dryer is far more economical than the open air dryer. It was the room required by the open air drying of large capacity plants which forced the artificial dryer to the front, the cost of drying not being appreciated.

A quarter of a century ago artificial drying would be looked upon incredulously and any claim that heat produced by artificial means would be cheaper than the free God-given air and sunshine, would have been considered as visionary, fanatical and well nigh sacrilegious. Five years ago a claim that brick could be set in the kiln by machinery would have been laughed at and yet a large percentage of all common brick made in the United States today are mechanically set and are set cheaper and better than by hand. The world moves on, conditions and methods change. Conditions and circumstances which control today are forceless factors tomorrow, even to the point of complete reversal, for an economy under today's conditions may be an extravagance under the new conditions of tomorrow.

It is not easy to break away from the old practices, to adopt new and unproven innovations and yet it is often the saving factor.

Just so it is in the burning problem. It is of the utmost importance, so much so that some of the most able engineers of the trade have been working on this problem. The importance is forcefully put into a circular, recently issued by the American Clay Machinery Co., of Bucyrus, O. In the circular the following appears:

"The best records show that the cost of burning clay products ranges from 35 to 55 per cent of the entire cost of the product. A moment's thought will convince you that this is greatly in excess of what it should be. The reason for this excessive cost is evident. You are consuming a lot of fuel from which you receive no benefit whatever. You may say that it is impossible, but recent tests have shown that only 25 per cent of all the fuel consumed in the average kiln is utilized in burning the ware. The remainder is lost either by improper combustion, radiation through walls of poorly constructed kilns and by non-utilization of waste heat from the cooling ware.

"Can you afford to throw away 75 per cent of your fuel just because your kilns are inadequate?

"The rapid strides of progress in the business world has forced upon the clay worker the necessity of a better product at a reduced cost. In order to effect this a kiln is required with the highest possible efficiency—a kiln which produces the greatest percentage of high grade ware at the least possible expense—a kiln which will assist you to eliminate this constant leakage which is preventing you from manufacturing a product that measures up to the standard of the market in quality and down to the standard economy in cost. It is a "burning question" and it is in your kiln. Do you want to remedy it?

"A brick manufacturer who has been burning wood in

his kiln for years was inconsolable because his wood supply had been depleted until it became an impossible problem because of the impossible expense. He had tried to burn with coal and failed. He asserted that it was just as impossible to use coal as it was to pay the bills for wood because his clay would not stand coal. In spite of his positive assertions that he could not use coal, experts on burning took hold of the problem and his brick are now being burned with coal and at less than half the former expense.

"As a clay worker you realize that much effort is being made to increase the capacity of the clay plant, but little attention has been given to the important feature of burning, beyond the fact that it is necessary to burn the product in order to market it.

"When your product comes from the dryer it represents half of the entire manufacturing cost and yet its real value depends upon how it comes from the kiln. Success or failure depends on the burning.

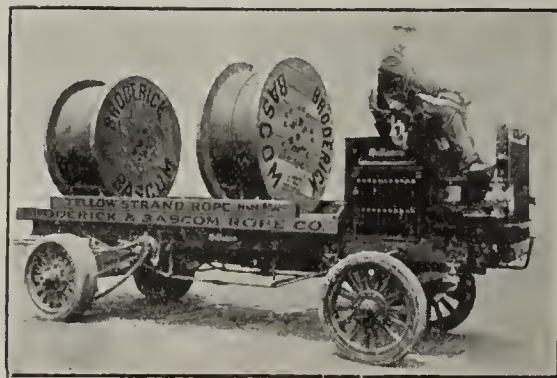
"It does not matter what it is costing you to burn your brick; if it can be done for half as much you are wasting money by continuing as at present.

"Even if your fuel bill is within what you consider a reasonable limit you are still wasting money if it can be split in two."

There is a wealth of truth in these statements taken from the American Company's circular and clay workers cannot overestimate the importance of successful and economical burning. Look to your kiln for leaks. There is money going to waste there, which would better be deposited to your credit in the bank.

AUTOMOBILE DELIVERY.

The Broderick & Bascom Rope Co. of St. Louis, Mo., take pride in their reputation for making prompt delivery of their well known "Yellow strand wire rope" and in



order to facilitate delivery they have recently secured a five-ton automobile truck known as the "Reliance" truck, which is shown in the illustration carrying two reels of rope weighing 11,150

lbs. This company, as far as we know, are the first wire rope manufacturers to use an auto truck for delivery, and is only another evidence of their modern and up-to-date business methods.

INFRINGEMENT OF PATENT.

The American Equipment Co. wishes to call attention to the fact that Patent No. 991,254 to H. Weber on a device for handling brick in Unit stacks, has recently been issued. The Equipment company's attorneys have advised them that the manufacture, sale and use of this machine would infringe on a number of the fundamental patents owned or controlled by them.

Notice has been given that parties using such machine will be promptly and vigorously prosecuted for infringement.

The Massillon (O.) Brick Co. has moved its offices from the Segner Block in South Erie street, to Room 316 McClymonds Building.

THE MAKING OF A STEAM ENGINE

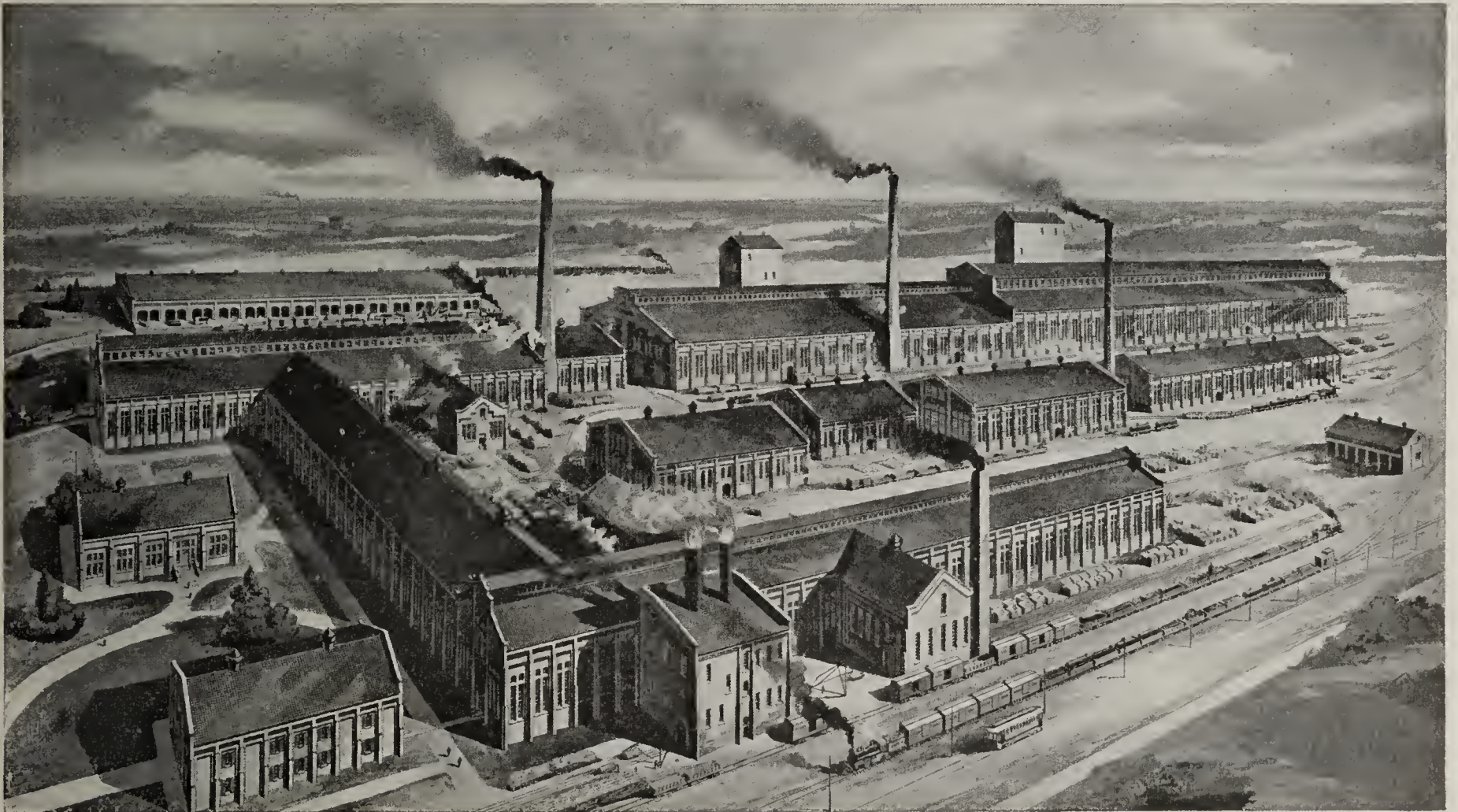
Wonderful and Interesting Process of Forming Powerful Engines from Molten Metal at the Plant of the Frost Mfg. Co. at Galesburg

The vital organs of a busy city pulsate in unison with the throbbing of its engines of industry. The ugly smokestacks of a laboring community are the pride of every true man living near them; they tower above the housetops like monuments to the dignity of labor as the workmen toil within the surrounding buildings. The chimney may appear a menace to some communities, but it is a totem pole to the honest laboring man; he worships it. Long live the smokestack! May it pour forth its volume of smoke and cinders and scatter the blackened particles over the entire community that some indolent person may be inspired by these messengers; they are symbols of achievement, occupation and toil.

Once the hand of man furnished the world's power; now through his ingenuity a drop of water is converted into very many times its volume and huge steel boilers

fare. Hundreds of thousands of wheels turn as these currents will, and with the stopping of the supply, hundreds of thousands of machines would cease to run. So we see that without the steam engine our factories are without power and without power we are idle; therefore the engine must be one of the greatest benefactors of mankind, and people who manufacture steam engines must themselves be benefactors.

We know of a manufacturing company located in Galesburg, Illinois, one of the prosperous little cities of the United States, where over five hundred horse power is donated to the world every day. Somewhere new factories are born and are to employ hundreds of men, and when the engines, which are furnished by this company, are set up and begin to turn the knitting machines, the button machines or whatever the kind may be, the here-



Extensive Works of the Frost Mfg. Co. at Galesburg, Ill.

strain under the pressure of steam; enormous engine wheels rhythmically revolve; and people are transported across the continent by tireless horses whose hissing breaths and cries of warning seem to continually say, "How wonderful is man."

The steam engine probably furnishes more power than any other agent in existence. Electricity is not a competitor as one would imagine, but an offspring of the engine. Motors hum in the heart of the city; but what makes the motors hum? Somewhere lies a huge engine which turns the armature of a dynamo causing the high-voltage currents to dart through the copper conduit and after their speedy chase for freedom through the crowded streets, they finally burst into a glow at an arc-light; or lift a score of human beings to the top of a skyscraper; or send a car humming through a thorough-

tofore idle hands are then employed and the familiar unrest is transformed into content. We visited this factory once and it proved a surprise to us; perhaps it will be a surprise to you. Let us go through the factory together.

Let us imagine that we have already taken a car to the works of the Frost Manufacturing Co., and now we are passing the watchman at the gate of the establishment. A high board fence encloses the buildings and with a letter to the president, Mr. W. S. Cameron, and also to the secretary and treasurer, Mr. Andrew Harrington, we are escorted respectively to their private offices where we are cordially received and furnished with a guide that we may enjoy a trip through the different departments. We are following the guide.

The man leads us to one of the buildings which we are



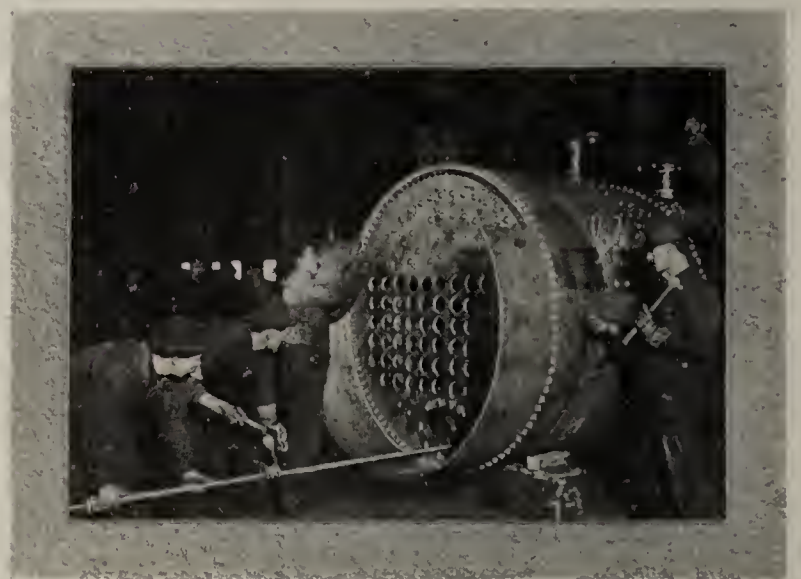
Filling Ladles with Molten Metal.



Punch at Work on Head of Boiler.



Planing Wood for the Patterns.



Finishing the Boiler.



Foreman in Office.



Glimpses of Engine Making.

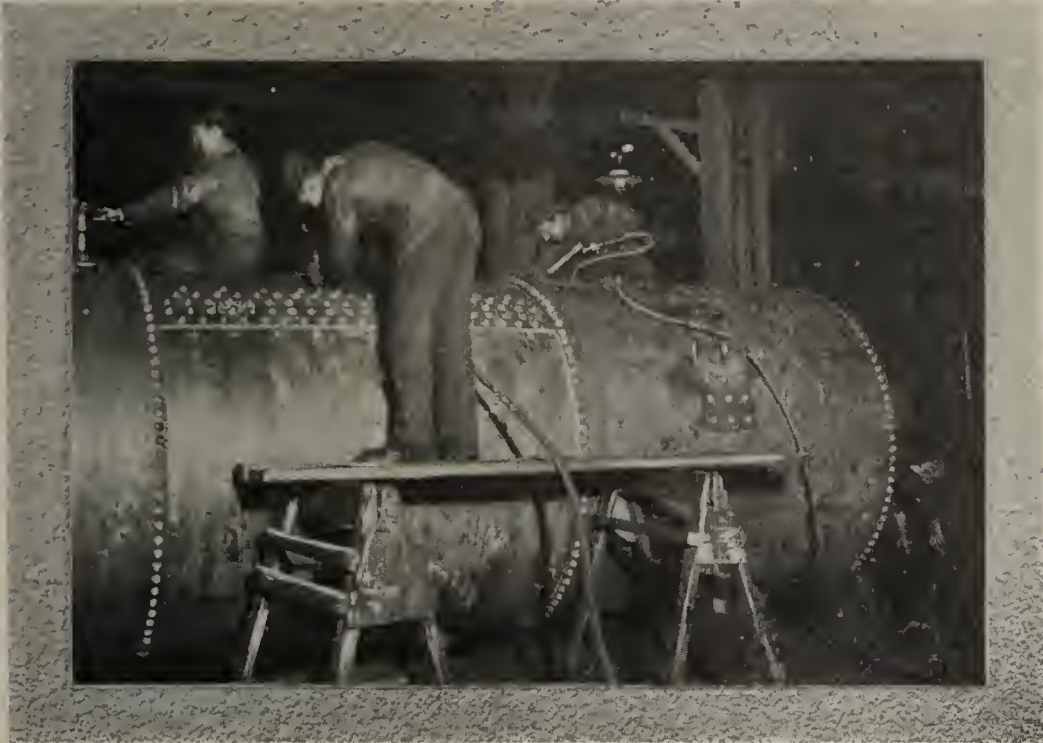
told is the wood-working department or carpenter shop, where the original patterns or models of the engines are made. He explains to us how the molder must make an impression in the sand by a wooden pattern before the liquid metal can be poured into the molds. The

this fuel used for? Let us pause for a moment. Here is a hill of coke and men are hauling it as fast they can into the furnace room. And what is the pile of rough looking sticks of coal? Here the guide again comes to the rescue and tells us that what we think is coal, is nothing other than pig-iron, and some of it is brought over for us to inspect. "To-morrow," he says as he places them on a board, "this rough metal will, by the aid of that coke, be melted and run into molds, and before two days have gone by, a freight car will haul this same iron out into the world's market in the shape of a steam engine."

"Marvelous," we exclaim, "but let us see how it is done."

We again follow the guide and with him we enter the molding room. The door is opened and the place is most uninviting. Nothing but dirt, dirt, dirt; in fact, dirt is just what they work with, or in molders' terms, black sand. We stand in awe at the appearance of the place. Heavy chains and moving derricks hang above our heads. Square boxes filled with black sand dot the sandy floor, and grimy men stand over these boxes pounding down the moist substance with different shaped tools. We hear little noise save this dead pounding—then at times the clank of a derrick chain breaks into the silence. We see a

man apparently standing knee-deep in the sand. He is making the mold for an engine fly-wheel, and as we approach we are pleasantly surprised to find that instead of the sand being knee-deep, the obstructed view of his feet was caused by a wonderfully smooth cut in the



Fitting Pipes and Riveting Boiler.

original must be made smooth and free from any splinters to which the molder's sand might cling. In order to accomplish this the carpenter shop is equipped with modern machines for the dressing of the wood. We are standing before a man who is running one of these machines. He is giving the controlling wheel a turn and the sharp knives are beginning to hum. He places a rough board in the feeding side and the almost human planer pulls the wooden plank into its hungry mouth and gnaws at it, saucily spitting out the shavings at the other end. Then we see the board delivered as smooth and polished as if the skilled fingers of a carpenter had worked over it for hours in the old way. The machine is turned off and as the hum and sputter die down we are attracted to the other side by the buzzing of a band-saw. The saw is so different from any we have ever seen that we can but stop and watch the endless chain of fine teeth cut through the board, never resting as did the old hand saw when being drawn back for another cut, but the large wheel constantly brings down the teeth, going through an inch board as fast as the dress-maker cuts the cloth with the scissors; but we must hurry.

The guide now escorts us to the pattern shop where hundreds of wooden engine beds, wheels, and innumerable patterns have been stored after being created by the carpenters in the shop just visited. We see a boy pushing one of the wooden engine beds on a car and we follow the car into the molding room. On our way to this room we notice a worker wheeling coke. What is

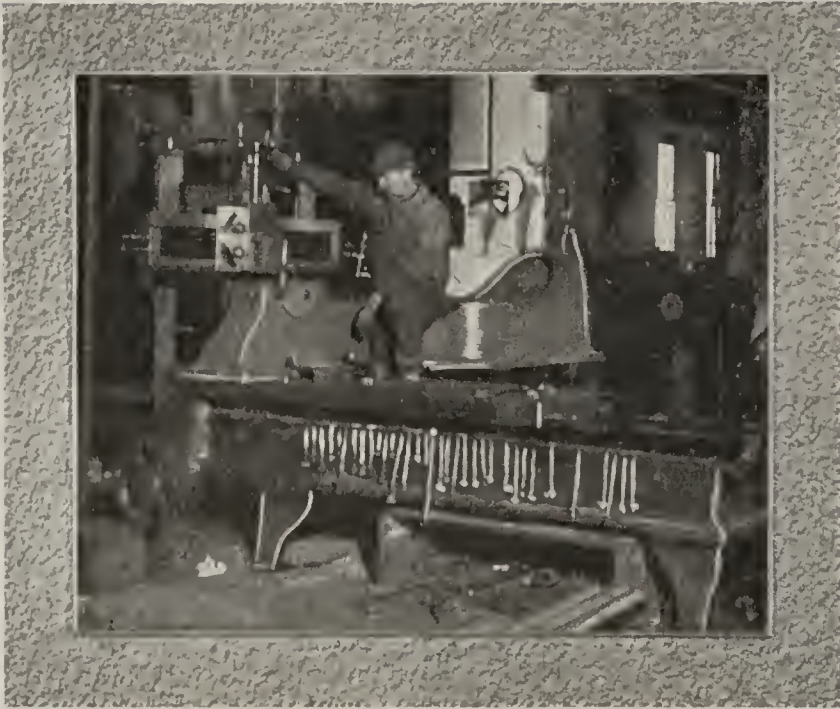


Mr. Andrew Harrington, Secretary and Treasurer of the Frost Mfg. Co.

packed sand. We begin to understand the work. We see where the spokes of the wheels are formed by the composition cores which radiate from the center. We turn and see another man making a smaller wheel. He is a young fellow and he is scraping some of the sand with a tool. His hand is steady and he applies the tool and it is beautiful to look upon. The sand appears as as an artist uses his brush. He is painting a picture

and it is beautiful to look upon. But we must pass along admiring others at work making different parts of the engine. We see a worker who has already formed one of the engine beds. We note that there is a top and bottom box to the mold, and when these two fit together there is left in the center a hollow form into which the iron is poured.

But what is the noise? There is a loud roar and we are in the midst of a shower of sparks. Men with blackened faces run hither and thither shouting to each other. The blast furnace is being turned on and the noise is caused by the air which is being forced up through the mixed coke and pig-iron. We hurry up stairs with our guide and we look upon the most terrific fire we have ever seen. Three men are throwing the pieces of pig-iron into the opening at the top of the furnace. The heat is so intense that we can hardly bear it, and we retreat as quickly as we can descend the stairs. But the room below is transformed since we left it. It seems no longer a foundry. The air is filled with an actual rain of sparks. They fly from the mouth of the furnace, making it appear like an inferno. Globules of molten iron are forced into the air, and as the particles are cooled on the surface, they burst into silver stars, illumi-



Putting Finishing Touches to the Mould.

nating that portion of the room and causing us to stand in silent admiration. We are in danger, yet we are charmed. Like the bird looking into the glaring eyes of the snake, we stand immovable as the bursting sparks rain around us. The men seem to be changed to blackened devils, some carrying long reddened pitchforks with molten iron dropping from the ends. One of them advances and sticks a fork into the opening whereupon the sparks cease. Suddenly we hear loud shouts and we see men scuffling along carrying a heavy iron ladle. They place it under the mouth of the sputtering monster, whereupon the long steel rod is again applied to the opening, and a stream of molten metal gracefully flows forth and slowly fills the vessel. The heat grows more intense. The place becomes a bee-hive of activity. Men are apparently running in every direction. Then all eyes are turned toward the large ladle. The huge derrick chain lifts the molten mass and carries it over to one of the molds, then all is silent. The room seems to have suddenly turned blue. We imagine it smells like brimstone, but in reality it is not so disagreeable an odor. As our eyes pass through this veil we see the mass of

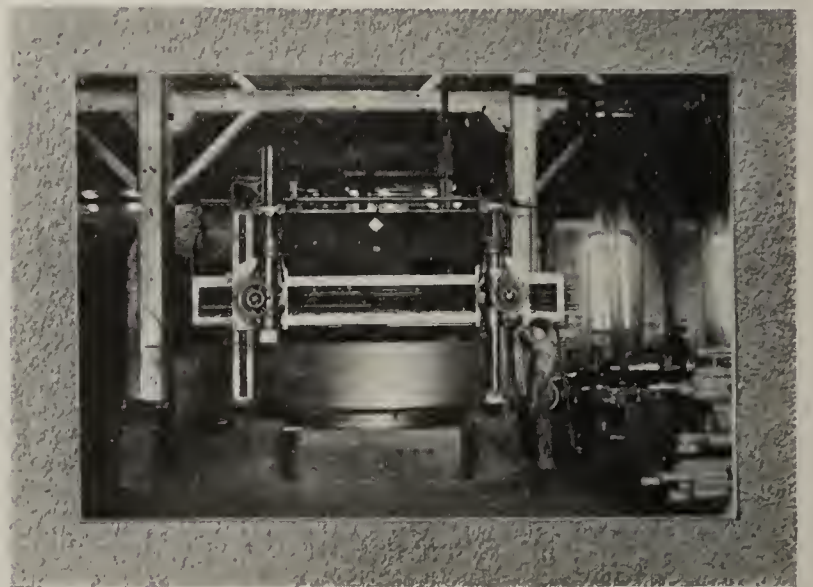
iron rise slowly in the air; dozens of men hasten to the spot and surround the mold. Immediately the huge ladle gradually tips, whereupon each man who has one of the pitchfork-like rods, thrusts it into the seething, sputtering pot and holds back the crust of hardened metal and dirt that floats on the surface. It reminds one of the housewife's holding back the cream



Finished Boiler Loaded for Shipment.

from a jar of milk as she pours out the lower portion. The stream continues on its way into the opening of the mold, and the gas from the escape-holes burns with a lurid light as the men ignite it by holding the white hot rods around the sides and top of the large box. The voice of the foreman as he cries "hold!" is the only sound that breaks the silence. No more iron is needed. Now the hollow form of sand is filled and the second step in engine-making is accomplished; an engine bed is molded; a fly wheel is formed.

The large crucible swings round with a creak as if it were glad to be relieved of the heavy mass of metal, but, perhaps to its regret, it once again is made to return to the furnace and the operation is repeated. Loud reports echo through the immense building as the process continues. The gas, which is being generated by the molten mass coming in contact with the moistened sand, explodes with a muffled sound. We move back to a safe corner and watch the hundreds of men carry small ladles of hot iron which they use in filling the small molds of the lighter engine parts. Now and then



Fourth Step in Engine Making.

a man cries out in pain as he carelessly allows some of the liquid iron to spill upon his shoe, and woe to him who wears any style of shoe which will allow the iron access to the inner portion of it.

The guide now tells us that the last mold is filled. The foreman shouts to have the remaining iron dumped out, whereupon the entire bottom of the furnace is dropped down and the unused metal is allowed to fall into a pit, splashing as does a pail of water as it falls upon the ground. The molds are most of them allowed to cool over night, then they are opened and the rough casting is lifted out of the now nearly dry sand. The iron is set; the sand has done its work, and another part of the engine is molded. We stand by a rough looking



Rain of Sparks from Furnace Mouth.

wheel which has been removed from one of the boxes, and as we admire it the two men who molded the wheel move up on each side. They are proud of it. They just can't help being so. They made it.

We have seen the rough castings formed, and passing by the foreman's tiny office in which he is figuring something we do not understand, we make our way to the third department where the rough wheels and beds are partially smoothed. We see a man with a chisel and hammer going over the edges and making the bed ready for the planer in the machine shop. Another man stands by a revolving drum, which is a barrel-like apparatus made to turn when partly filled with the smaller rough castings. In this manner the pieces of iron knock against each other and in a short time they are all well polished. Here is a battle where a blow is considered a favor, and where each favor is at once returned. The pieces of iron pound and thump each other, and the harder they are hit the more perfect they become. Some of the rougher edges refuse to come off by this process, and we see an old man grinding those protruding portions. His face is dotted with fine particles of iron which fly from the emery wheel. Sparks shoot from the bottom of the wheel as he cleans the castings by this process. He hardly notices us strangers; he has seen many a visitor in his day, for he has ground at the emery wheel for twenty years. I wonder if he knows how to grind a piece of iron? He surely must. We will leave him and pass through the sliding doors to the machine shop.

This is the fourth step in engine-making and is probably the most extensive of all. Here we see machines of every description. Drilling machines, threading machines, lathes, planing machines, and every known machine which is needed for the completion of an engine. We recognize one of the large wheels which is now mounted on a lathe. Round and round it turns and each revolution cuts a rough band from off the surface, making it, when the entire surface is gone over, glisten like a mirror. The form is familiar

for we have seen the original pattern of this same bed, and we also saw the casting in the smoothing room. The bed is now receiving its finishing touches, the large planer causes the casting to ride backwards and forwards while the planing tool stays stationary and cuts the rough surface. A man is riding on the bed feeding the tool. We think that we would like to ride in his place, and that it would be great fun. We question him and find that he does not see it in that light. We follow the guide past the foreman and his assistant, where we see dozens of smaller planing machines, which are used for the smaller castings. Then we see a new type of machine, a planer which does its work by the aid of an emery wheel in place of a steel tool. It gives the steel a fine polish. One hundred men are employed running these different machines. Then there are some who work at the benches, being experienced with the file or chisel, or paint brush. But see! they are hoisting a finished wheel and loading it into a car. We approach and watch them. It belongs to an engine which has just been completed, we are told, and after we admire the change which has been wrought in the rough casting, we start for this finished machine which they are testing.

Every engine is run before it leaves the shop. The engineer is just turning the steam on and the wheel begins to revolve. We are very curious as to the noise, (or rather lack of noise,) that the powerful metal horse makes as it does its work. There is little or no sound, only a faint hiss of steam as the piston slides backwards and forwards. There seems to be no loss of energy, every atom of the vaporous water is being utilized. We stand before the finished piece and we marvel at its simplicity after we have traced it from its birth. But we wonder where the power comes from. We wonder where the steam will be generated when this engine has been shipped away. This causes us to think of the boiler.

We leave the machine shop with its squeaking of lathe belts and grinding of planer tools and enter the boiler



Making Mold for Engine Fly-wheel.

shop. Hardly have we opened the door when the most unearthly pounding and hammering seems to burst our ear drums. Our guide, however, being again ready for an emergency, hands us a piece of cotton-waste which we tear in two putting it in our ears. This is at once a relief and the pounding can now only be felt. The vibrations strike against our bodies but the waste protects our hearing organs. We find this place a new world of work. We see men hammering, boring, fitting pipes and riveting. The compressed air tubes coil around

the boilers like huge snakes. Not one man is laboring in any manner whatever, unless he be making the greatest possible noise at it. The pneumatic hammers attached to these tubes hum and snap against the steel plates and as we pass one of the nearly finished boilers we are made aware of the oddity of this strange occupation. One boy has his head and arms sticking out of the boiler manhole. He appears like a prisoner but his smile betrays his situation; he is holding hot rivets with the pinchers which he has in his hand. At the other end of the boiler is a fellow at work with a pneumatic hammer. He calls the boy and we see him let himself back into the boiler whereupon he immediately picks up a white-hot rivet and thrusts it through one of the holes in the boiler head. The man with the pneumatic hammer at once presses the pounder against the hot steel and the instrument begins to hum. The head of the machine vibrates so that the man seems to shake with the palsy. One would think the fellow has no nerves at all; he surely cannot stand it long. This man is holding in his hand a machine which has done more to simplify boiler-making than any other invention. It might be compared to a needle. He is sewing, only instead of using thread and cloth, he sews the edges of the overlapping plates of steel, with rivets and a pneumatic hammer. The hammer strikes the metal hundreds of times a minute, requiring but a short time to take a stitch, or rather, drive a rivet; and one would have quite a job ripping this seam.

But see! They are starting to make another boiler. Come, let us watch them. The foreman is overseeing the marking of a piece of steel preparatory to punching the holes. One of the mechanics is snapping a chalk-line. Think what it would mean if he made a mistake in his measurements. When this is finished and he has made the markings for the holes, the steel is carried over to a punch. This punch is now at work on the head of another boiler. Let us watch it.

It is simply a large conductor's punch, similar to that which one sees on the cars, only it is made much stronger and of course a different shape in order to accommodate the large boiler plates. A man would not be strong enough to work this punch, so hydraulic pressure is made to force the little steel tool through the boiler head. How easily the tool penetrates the steel. Just see the checker-like pieces fall below the machine. How much labor is saved by this punch compared with the old boring machines. But the punch is not all to be seen. Look at the large steel plate which is already perforated and is now being bent in the shape of a boiler. Two fellows are rolling this plate and bending it as easily as one would bend a piece of pasteboard with his fingers. There are three rollers, and when they are correctly situated, they bend the steel to the proper curve. The men are testing the curve with small forms to see that it is correct. Luckily it is set right, so the machine continues on its way until the plate is nearly the shape of a boiler. Then it is swung up high in the air where is situated a hydraulic lift and it is there that the seams are sewed. This is practically the same machine as the smaller one which the boy held, only it flattens the rivets by hard pressure rather than by pounding. We can climb up and see the machine work. A boy stands nearby and feeds rivets which he takes out of a glowing forge, and as fast as he can place them in their respective holes, the man manipulating the machine pulls the lever and thousand of pounds pressure causes an airtight seam to be sewed. The tiny steel rivets while still softened by the intense heat are flattened by this power-

ful machine and the tremendous pressure afterwards exerted by the steam in the boiler is resisted by these apparently insignificant metallic arms; yet in their combined influence there results an unconquerable force which the steam itself cannot overcome.

But what in the world are those men making hats over there for? Of all the hats a person ever saw these are the largest and heaviest. Yet they are hats, and the boilers wear them instead of persons. When these are placed on the boilers they serve as steam domes and are riveted to the top in order to supply a grade of steam that is to a certain extent dry, or what the engineer would call dry. But we cannot stop to go into minute details for time is fast flying. It is now nearly five o'clock and we must not forget the blacksmith's shop. We must leave this world of noise and rumble for the musical clang of the blacksmith's hammer.

We at once retrace our steps and on the way we see men loading one of the finished boilers. A fellow is pulling on a small chain but on account of the wonderful arrangement of pulleys he is able to slowly lift the entire ten thousand pounds: it does not seem possible. We pass this car and find that we have to nearly climb over a large framework of doors. This, after questioning, we learn is to be placed in front of the finished boilers when they are set in place. Again we understand, and we leave the fellows pounding their chisels as they smooth off some of the rough edges. Two of the boilers are seen on our way to the blacksmiths, and we wonder, as we admiringly pass on, to what part of the world they are to be shipped.

The anvil rings as we open the door of the blacksmith's shop and the light from the forge illuminates a form which stands by the fire. It is one of the blacksmiths. He is heating a long rod and the sparks speedily fly from the furnace. He needs no bellows as of old, but compressed air sends the flames high into the atmosphere by merely a turn of the lever. At the other side of the shop is a large steel axle which is being heated in a huge forge. It has just reached the proper temperature and they are removing it to the steam hammer. It now rests on the life-like machine and when the steam is turned on, the ground shakes as the hammer hits the glowing metal. The earth does not give way: something else gives; the steel flattens into correct shape and the work of many days is accomplished in but a short time by the aid of this steam power.

But hark! What is the shrill whistle outside? Luckily the axle has received its last pound, for it is five o'clock and the screaming note is warning the men. The forge ceases to blow. The pounding of the pneumatic hammers is heard no more. The shrieks of the lathe belts as the many machines are stopped seem to compete with the whistle. The huge engine in the main building runs slow,—slower,—then stops. The workingman picks up his dinner pail, throws his coat over his shoulder and starts homeward. The day of toil is at an end. 'Tis time for us to go.

WILL REBUILD.

We have been advised that the Hancock (Md.) Shale Brick Co. will at once rebuild the portions of their plant which were injured by fire some time ago. The buildings and machinery destroyed were valued at \$10,000 and \$7,000 insurance was carried. Among the machinery destroyed were elevators, line shaft, belting, pulleys, screens, mixer, conveyors, dry press, dry pan, boiler and engine.



Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers— Market Fluctuations and Industrial Prospects

TRADE GOSSIP.

The North American Brick, Tile & Pottery Co., located at Tower, Minn., turned out its first 10,000 brick on June 23rd. They report that their new machinery is working well.

It is reported that Edw. Barr, a clay expert of Austin, Minn., has discovered a splendid bank of fine clay at Zumbrota, Minn., which it is calculated will provide clay enough for many years for a factory which shall make a high-grade of clayware. The news that the new concern is to locate on the East side of the Midway District, has caused the property owners in that vicinity to feel greatly pleased at so fine an addition to their colony.

The Fairmont (Minn.) Drain Tile & Brick Plant shut down recently owing to the fact that a suitable clay could not be found for use; that which they have been using containing too much limestone, which, as soon as wet, slacks and cracks open the brick or tile. Experts are at work hunting for a more reliable bed of clay.

C. H. Finley has been awarded the contract for installing an 8-tunnel drier on the plant of the Standard Brick & Lime Co., just north of Missoula, Mont. The contract price is \$2,575, and work has already been started.

C. W. Kampfer has recently discovered that his farm, located adjoining the city of Glasgow, Mont., contains an unlimited deposit of superior brick clay suitable for the manufacture of brick, tile or pottery. He has arranged to have the material thoroughly tested, and if it proves satisfactory will commence the manufacture of brick for the home trade, there being considerable demand in that vicinity.

The big pressed brick plant, established at Lewiston, Mont., through the enterprise of leading business men of that city, is now in operation under the management of John Gretencort, Jr. The company is assured in advance of all the business it can handle for some time and the industry will give a nice little boost to the city's payroll.

Anton Lerch and Christian Lerch have brought suit against the Missoula (Mont.) Brick & Tile Co. in an endeavor to have a 99-year lease which that company holds on a tract of land owned by the plaintiffs, canceled. The complaint states that the land is agricultural in nature and according to the laws of Montana cannot be leased for a longer term than 10 years.

The Davenport (Okla.) Brick & Tile Co. made its first full day's run on the 26th of June. The plant has a capacity of 50,000 brick per day and was built by local capitalists after a thorough test of the quality of the shale found in that vicinity. Experts say that the product will equal any brick products in the southwest.

F. E. Ladd and Charles Birchy, Ft. Payne, Ala., doing business as the Ladd-Birchy Brick Co., have filed suit in the Circuit Court against the Bradstreet Co., Birmingham, asking for \$30,000 damages, claiming that through a libelous publication issued by that company their credit and business standing was impaired.

The Sulligent (Ala.) Brick & Mfg. Co. has filed its certificate of incorporation with the secretary of state. Its authorized capital stock is \$2,000; the incorporators are A. W. Hollis, W. G. Preddy and J. R. Craig.

The Commercial Club, El Campo, Tex., is promoting the organization of a company to establish a brick plant to develop clay deposits in that vicinity.

The Waxahachie (Tex.) Brick & Earth Co. has been incorporated by G. W. Coleman, E. C. McCartney and J. T. Spencer, with a capital of \$60,000.

The Coleman (Tex.) Commercial Club is endeavoring to secure a brick plant for that place. An unlimited supply of the finest material, with cheap labor and fuel, and an unlimited market for the output in an unoccupied territory are some of the advantages offered.

The new brick plant at Greenville, Tex., which was organized largely through the efforts of the Booster Club, has just recently finished burning its first kiln of brick. The product appears to be an excellent building brick and burns a pretty red.

W. A. Carver contemplates the establishment of a brick plant at Rougemont, N. C., which will have a daily capacity of 30,000 brick.

The plant of the Gardner White Brick Co., situated about half a mile north from Sanfords Corners, N. Y., was recently totally destroyed by fire of unknown origin. The plant employed 24 men and had a daily capacity of 25,000 brick. At the time of the fire between 400,000 and 500,000 brick, valued at about \$40,000, were in the warehouse, but it is believed that most of them can be saved.

The Fulton Fire Brick Co., Bakersfield, Mo., has been awarded the contract to furnish the Great Northern Railroad with the fire brick linings necessary to convert the locomotives of the road into oil-burning engines. The burners are to be used on both passenger and freight locomotives in the Montana district, and it will require about three months to fill the contract. The company also has the contract for furnishing the Chicago, Milwaukee & St. Paul and the Atchison, Topeka & Santa Fe railroads with similar linings.

The Reliance Brick & Tile Co., Belle Plain, Ia., has left a contract for the construction of a three-quarter mile switch from the railroad to its plant. Work will start immediately.

The annual meeting of the shareholders of the Mohawk Valley Brick & Supply Co., Utica, N. Y., was held in the Stewart Building on the evening of June 21st, at which time the following officers were elected: President, Thomas McDermott; vice-president, George B. French; secretary and treasurer, T. F. Conboy; directors, Thomas McDermott, George B. French, Frank Dolan and Frank R. Kernan. No increase was made in the capital stock.

THE PACIFIC COAST.

San Francisco, July, 1911.—Building contracts of real importance, those to which the material dealers and contractors have been looking forward to for some time past, are still rather slow in coming out, but on the whole conditions are favorable, and by this time the outlook for the future seems to be pretty well assured. The local record of buildings for which permits were issued last month is hardly as good as for the same month last year, but it is believed that this month will show a material increase.

In Oakland the record will be greatly increased by the letting of contracts for the new city hall, which is probably the largest single job ever given out in Oakland, and is larger than any building erected in San Francisco for some time past. Aside from this the work in hand consists of small stores, theaters and apartments, with a liberal sprinkling of high-class residences. The number of large jobs being figured, however, has been greatly increased, and some deals have practically been closed, though the architects are not yet willing to make any announcement. Many buildings of fair size are being erected in country towns, consisting principally of court houses and jails, schools and banks, with a fair number of substantial mercantile structures. For the last two years

the tendency in country towns has been toward a much more substantial class of construction than has formerly prevailed.

The common brick market is still strengthening. So far \$6.75 is the prevailing price, but for several weeks \$7.00 has been obtained in special cases, and several prominent manufacturers state that after July 1st, they will sell nothing below this figure. So far no surplus of brick has been produced, and several concerns, having sold their own output in advance, are compelled to buy from others in order to fill new contracts. If the large jobs now in prospect are let within the next few weeks, it is very likely that the plants now running will have difficulty in filling orders.

There is, of course, an enormous potential capacity for the production of brick around San Francisco, but the manufacturers who are not now operating show no inclination to start up. Prices are not likely to advance much beyond the present figure, however, owing to the possibility of competition from other quarters, but unless unforeseen conditions arise values should be strongly maintained for the balance of the year.

The demand for pressed brick and terra cotta is in proportion to that for common brick. These materials are being used for facing and trimmings on many concrete, as well as brick buildings, and the large number of shadings and glazes recently introduced are making them more popular than ever with architects. The many local imitations of tapestry brick are also gaining in popularity, being used for facing some of the largest and handsomest structures now under way.

The city of Oakland is furnishing a better market for clay products than ever. While bids on the Oakland city hall were \$300,000 higher than the estimate, it has been decided to raise the money by special tax and carry out the original plans and specifications. The lower part of the building is to be of granite, with a superstructure of pressed brick and terra cotta, the contract for which was taken by Gladding, McBean & Co. at \$65,000. The same company also secured the contract for common brick and general mason work on its bid of \$122,000. The common brick will be purchased from other parties, as this company confines its output to pressed brick, terra cotta and pottery. Gladding, McBean & Co. have also taken a contract for enameled terra cotta for an eight-story lodge building for the Native Sons of the Golden West, on Mason street near Geary. This company is making a number of improvements at its plant at Lincoln, Cal., which will greatly facilitate the handling of its products.

The Los Angeles Pressed Brick Co.'s plant at Richmond, Cal., has proved a great success since its establishment a few years ago, enabling this company to get into the San Francisco market, without the expense of shipping from southern California. Within the last year this plant has been greatly improved, and now produces practically all the Los Angeles products except enamel brick. Plans for additional improvements are now being carried out, and it is expected that by the end of the year the capacity will be twice as large as at present. Orders sent in by the United Materials Co., the San Francisco agents, are taking up practically the entire present output. This company is now making deliveries on its large roof tile contract at the Presidio. The United Materials Co. is keeping the common brick output of the Port Costa Brick Works sold out in advance. Chris Berg, head of the Port Costa plant, was up from his home in Los Angeles recently, and is well satisfied with the way things are going.

It is reported that the plant of the California Pressed Brick Co., near Niles, Cal., which has been practically closed for the last month, has been leased to parties who have been formerly connected with several other brick concerns around San Francisco, and will be opened on a regular scale early next month. This large plant, which was installed several years ago, has never been operated with much success, and so far its products have not appeared in any quantity on the San Francisco market.

According to a recent report of the receiver of the California State Deposit & Trust Co., the Carnegie Brick & Pottery Co. is among the most promising of its assets. This plant has been quite an important factor in the San Francisco business for several years, and the Western Building Material Co., its present agent, is working up a very substantial business in its products.

Edward Horton, formerly superintendent of the Remil-

lard Brick Co., has won his suit against that concern for \$8,000 as commissions on its business during his service. Horton is also suing the company for \$25,000 for breach of contract.

At a meeting of the Rotary Club in Oakland, June 14, C. K. Holloway, secretary of the Oakland Paving Brick Co., presented an interesting paper on the development of the brick manufacturing industry in California.

For the purpose of continuing its experiments with paving brick, and making needed improvements in the plant, the Vallejo Brick & Tile Co. has levied an assessment of 10 cts. per share.

The annual meeting of stockholders of the King City, Cal., Brick & Enamel Works was held July 10.

The West Side Brick Co., in the Kern county oil fields, has just opened its first kiln of brick. The material was made on orders taken some time in advance, and it is reported that present inquiries will keep the plant in continuous operation for some time.

John Apperson's new brick plant at Willows, Cal., started up the first of the month, and the management expects to keep busy all summer.

The Tracey Ornamental Brick & Tile Co., with T. H. Tracey, manager, at San Diego, Cal., has opened a new plant at the foot of Hawthorne street in that city.

EASTERN DEALERS INDIFFERENT REGARDING MERGER.

New York, July 5th.—It is, of course, too early to note the effect of the formation of the Greater New York Brick Co. upon the buying movement, but recent transactions indicated an absolute lack of interest in the tendency of the market.

It was natural to expect current prices to move up stiffly and persistently following the temporary organization of the new selling company at Newburg a few weeks ago, but nothing of the kind happened. Instead, current market prices dropped. On June 17th the wholesale price quoted was \$6.00 a thousand, with some selects bringing \$6.12½. Following the report of the formation of the brick combine prices actually fell a quarter of a dollar a thousand, making the quotation \$5.78½. There it held until the following Friday, when the permanent organization meeting was held. On Saturday there was a general weakening with little actual buying, and on Monday, the beginning of the last week of the old regime, prices dropped still another shilling, making the live quotation \$5.75 for the very best new Hudson River brick.

The manufacturers are active while the dealers sulk. They have already begun their shutting-down policy on shipments. The number of barges that came in on Sunday, June 18th, was 18, while the number that came in on June 25th was 11.

The buying movement was fairly heavy the preceding week, however, because the dealers did not know just what turn affairs in the new organization would take. The transactions in detail show that the sales were 15 barges heavier than the arrivals:

Left over, June 17, 1911, 19.

	Arrivals.	Sales.
Monday	18	13
Tuesday	0	7
Wednesday	9	15
Thursday	10	15
Friday	8	10
Saturday	10	10
	—	—
Total!	55	70

Left over, June 18, 1910, 9.

	Arrivals.	Sales.
Monday	20	11
Tuesday	7	15
Wednesday	5	7
Thursday	15	10
Friday	15	9
Saturday	7	6
	—	—
	69	58

Left over, June 25, 20.

Left over, June 26, 4.

The moral effect of the policy of making the supply conform to demand is shown in the foregoing totals. In 1909

the arrivals for the corresponding weeks were 71 with 52 sales; in 1908, 59 arrivals and 46 sales, and in 1907, 69 arrivals and 53 sales. All these, when compared, reveal the change that the second week prior to a holiday almost invariably shows—a shipment larger than the sales. In last week's transactions, the sales were considerably larger than the arrivals, although the prices were weaker.

The consuming market is not at all alarmed over the proposed innovation in brick selling methods and so far as the dealers are concerned they are talking of strengthening their own organization by effecting a closer combination of the buying interests, although for what purpose is by no means clear. So far as prospective builders and architects are concerned, they shrug their shoulders and say that if any attempt is made to advance prices to extortionate limits they still have the New Jersey and Connecticut supplies to draw from.

The General Market Condition.

Wonderful changes continue to come to pass in the building material market. Of course this is generally expected at this time of the year, but such a sudden change for the better was not anticipated by anyone this year. When the plans for new buildings for five consecutive weeks in Manhattan exceed in numbers and value the totals for corresponding weeks last year, and for three consecutive weeks show a gain over Bronx, and Queensborough, running from 40 to 50 and in one week even to 80 per cent more than for the corresponding weeks in 1910 there is no cause for further doubt regarding the liberality of the share of patronage the brick industry will receive from it the remainder of the season. When the wonderful activity of New Jersey suburban operations are included in the computation, all traces of the pessimism that seemed to rule in every section early in the year should vanish.

An Attempt to Tie Up All Building Operations.

But in the height of this change for the better, there loomed up on the building horizon a spectre that, for a week, seemed destined to crush the prosperity of the entire season. Its portent proved more terrible than its realization, but the fact that this result, rather than the opposite, came about was due solely to the liberal expenditure of thousands of dollars and whole days of busy building-material men's time in crushing an insurrection that had all the earmarks of the bitter and protracted lockout of 1903.

On May 26th trouble broke out in the yards of the N. & W. J. Peck Co. at the foot of 48th Street, East River. It was not considered serious at the time and new men were put on to take the places of the dissatisfied employes, numbering about a dozen. In the course of a few days the employes of the H. W. Bell Co., in the Bronx, went out on strike. The contention was not so much for higher wages or shorter working hours as it was for a recognition of the union and an agreement to abide by the decision of the walking delegate or business agent, according to a statement made to the writer by the labor committee of the Building Material Dealers' Association.

These were exactly the demands made by the building material yard men in 1903. Prior to that time there was no organization, and the employes demanded that the employers recognize their union and give them other concessions. The dealers stood together, organized the association, which saved them from serious consequences a week ago, and fought the employes. Then came a period of riots and a withdrawal of all the union employes on construction work throughout the district. The building-material interests met this action by refusing to sell any material of any kind to any company or person. Then the walking delegate, Samuel Parks, went into the brickmaking districts and tried to organize the brickyard laborers into unions and force skilled labor wages for the yard men upon the manufacturers. When the brick manufacturers retaliated by threatening to shut down their yards indefinitely, thus tying up all building in New York City and vicinity (for the Hudson, Raritan and Connecticut yards were affected by the threatened tie-up) the unions gave way and the building-material dealers won their point.

When, therefore, the incipient fires of a great labor conflagration again broke out, the N. & W. J. Peck Co., one of the largest distributing companies in the city, immediately appealed to the Building Material Dealers' Association. The H. W. Bell Co., not being a member, had to fight the unions alone.

The association immediately took over the complete con-

trol of the Peck yards. It operated the business exactly as though it had absorbed it, discharging all the striking employes and putting strike breakers to work. Of course, riots immediately occurred and a large amount of damage was done. Certain influential members of the association's committee, who knew Police Commissioner Waldo personally, went to him and explained the situation, and urged upon him the necessity of keeping things quiet so that builders who were bringing out their plans for construction work after deciding to lay them aside until fall might not be alarmed and jeopardize the business of all the building trades.

Harry Dougherty, chief of detectives for the private bureau of the city's chief of detectives, was put in command of a large force of sleuths and Commissioner Waldo himself stationed plain clothes men in the yards, on the wagons and in the neighborhood to spot out the sympathizers.

Disorders in the neighborhood soon ceased, and on Saturday Nathan Peck, the president, told the writer that he considered the crisis over. No mention of the trouble was made in any of the local newspapers until the report of the occurrence appeared in the trade press, when the danger was practically over, so that the consuming market for building material was not in the least affected by the trouble.

Concrete Versus Terra Cotta Fireproofing.

Clay interests are closely watching the fight in the Board of Aldermen on the fireproofing provisions in the proposed new building code. The principals, as far as the present combat is concerned, are the National Fireproofing Co., whose works are at Keasbey and Perth Amboy, N. J., and elsewhere against the concrete field. The National Portland Cement Manufacturers Association, the remnants of the old Licensees Association in this city, the steel-concrete construction companies and some large engineering interests, are bringing every pressure to bear upon W. P. Kennealley, chairman of the Building Committee, to let down the bars against the broader use of reinforced concrete in building construction despite the fact that every one of the building collapses so far this year have been concrete buildings, notable among these being the apartment house in West 78th Street, where several men lost their lives.

So far the pleas of the concrete men have been futile. Mayor Gaynor's secretary said that it was not probable that the committee would be permitted to do anything unfair in the way of giving a monopoly to either one interest or the other, because Mayor Gaynor would veto the bill, if he, or the experts he has engaged to advise him on the technical features of the code, detect any unfair tactics. A day or two after that the mayor sent a note to the committee advising that he would not approve any bill that gave an advantage to one type of fireproofing over another, unless there were good and sufficient scientific reasons for so ruling. This made the hollow tile interests jubilant, and brought from the concrete interests an offer to conduct a test of the fire resisting powers of both reinforced concrete and hollow tile, at absolutely no expense to the city. This offer has not yet been accepted.

Trade Conditions in the District.

Various clay products companies in the district express themselves as being pleased with the change that has come about in building activity. The manufacturers have worked off much of their surplus and none of them expect to have to close their plants as a result of the new selling arrangement, as some of the newspaper reports stated. The dealers are liberally stocked and the attitude of the Connecticut and New Jersey producers is that of interested anticipation, inasmuch as they see a possible field for competing with Hudson River brick, when supply and demand are kept within very narrow bounds. There is no reason now why building work, and consequently brick consumption, should not develop into a very satisfactory volume.

S. Percy Hooker May Manage Sales.

One of the developments of the last fortnight was the report that S. Percy Hooker, Commissioner of Highways of the State of New York, had been asked to consider the proposition of taking the salesmanship of the new company. At the time of writing Mr. Hooker had not decided upon whether to take the office or not, but it was presumed that he would do so as soon as Governor Dix made known his appointments, which will make the office held by Mr. Hooker vacant. Mr. Hooker is a Re-

publican and the state administration is now Democratic.

The fact that a disinterested manager was to assume command of the new company's selling forces met with favor among both manufacturers and dealers here. This was a stumbling block in the way of many former attempts to control brick supplies in this city. With interested parties managing sales, it was frequently charged certain brands were sold in preference to others. Whether these charges were true or not, this was the rock that sent many new selling companies to the bottom. With a man in charge who cannot be charged with affiliation with any particular brand of common brick, satisfaction seemed to prevail.

May Mean Passing of the Exchange.

The inauguration of this new system of disposing of common brick here may mean the passing of the famous old Building Material Exchange in Vesey street. Here manufacturer, agent and dealer met on a common plane every afternoon and bought and sold their commodities. But of late years the telephone has been usurping the provinces of the exchange and thousands of dollars worth of brick now change hands over the 'phone between dealer and agent merely on the agent's statement as to whether his supply is good or bad. Years of personal contact on the old Exchange gave buyers an excellent idea of the integrity of the agents and the result is a business honor system seldom found in other lines of commerce. The buyer could depend upon the agent's word and the dealer showed his appreciation of this by sending his check for the amount of the transaction in most cases even before the brick were delivered, but always inside of ten days.

Now this is to be changed, although the integrity of the agents is so highly considered as an asset by the new company that every one has been offered positions, many of them on their own terms. Under the new system the buying and selling will be done from a central office and the shipments from the kilns will be made only when there is a demand for brick in this city.

OUR BUCKEYE LETTER.

Columbus, O., July 12.—Seasonable building in all lines, in Ohio, has been felt by the brick and clay manufacturers. Drain tile manufacturers have been experiencing a season of activity, while the building brick men have been doing a nice business. Paving brick and sewer pipe manufacturers, and especially those who are considered of an independent character, have been working their plants about to capacity. All the plants in the Ohio valley are going along steadily, while those in the Muskingum and Hocking valleys see no signs of a dearth in orders.

At Defiance, O., the new stack of the Defiance Gas & Electric Co., has been completed by the Alphonso Custodius Co., of New York, and it is one of the tallest in Ohio, being 137 feet in height with a 12 feet 7 inch base outside measurement and 6.6 inside measurement. The special brick used by the contractors on this job came from one of their plants in the Zanesville territory, which is only one of the 57 different yards under control of this corporation. Five men who were employed in erecting this stack received \$7 per diem. It was this same company which erected the 506-foot stack for the Washington-Montana Consolidated Copper & Silver Co., at Great Falls, Mont., several years ago, which at the time was mentioned by "Brick."

George C. Zeigler, of Carmi, Ill., for \$9,997 has bought the dry press brick plant at Evansville, Ind., which has been known as the Edwards Vitrified Brick & Sewer Tile plant. The property was sold, it is reported, to satisfy a mortgage on the plant.

Secretary P. B. Beldon, of the Canton (O.) Pressed Brick Co., stated that the company had taken the necessary steps to increase its capital from \$52,000 to \$200,000, and that plans were maturing for the building of another plant, which will cost about \$40,000. This new improvement will be located near the Waco plant, and will be ready for operation on or about January next.

At the New Brighton (Pa.) plant of the American Sewer Pipe Co., one man was killed and another badly injured by a delayed explosion of dynamite in the clay mine of the Marion Hill sewer pipe plant. The men were father and son, the latter being killed.

The Lexington (Ky.) Brick Co. has secured the con-

tract to furnish all brick for the new Mt. Sterling (Ky.) postoffice. The firm is shipping from three to five cars of brick daily, and business is good.

At Fredericksburg, O., the Ohio Face Brick Co. has been formed with \$70,000 capital stock by A. G. Putnam.

At Linwood Heights, Portsmouth, O., Dacher & Euth own a rich shale bank, and the men contemplate the erection of a modern brick plant at an early date.

The Alliance Brick Co. continues to do a large business in paving brick and paving block and among the recent orders booked is one which calls for 100,000 for service in Canton, and another large order from East Palestine.

The Warren B. Ferris Brick Co., of Columbus, has been awarded the contract to furnish the building brick for the new school houses to be built this season by the Board of Education of Marion, O. It is estimated that about 60,000 brick will be used and these have been sold at a price of \$12 per M., it is said. The contract has been awarded for construction of these school buildings to W. C. Handshy, of Zanesville. The brick manufacturers of Marion were after the contract, but they lost out.

W. L. Ogden, president of the Excelsior Fire Clay Co., of Lisbon, O., has awarded the contract for the construction of a new kiln, required to keep up with increasing orders.

The C. W. Raymond Co., of Dayton, O., has filed an action in the Common Pleas court of Columbiana county, at Lisbon, O., against George A. Frink, receiver for the Champion Brick Co., of Wellsville, to recover from the defendants some brick machinery which, it is alleged, they are wrongfully detaining from the plaintiff. The machinery consists of one brick machine, one pug mill, and one rotary brick cutting machine. It is asked that a writ of replevin be issued and the property turned over to the company and damages in the sum of \$200 be awarded them for the wrongful detention of the property.

Life is valued at \$10,000 in a suit brought in the United States court here recently by John W. Porter, administrator of the estate of the late Benjamin F. Elliott. For alleged neglect of the safety of their employees the McClain Brick & Tile Co., incorporated under the laws of Delaware, is asked this amount on account of the death of Mr. Elliott, who last March was caught in a belt at the Hammondsville, O., plant of the company, receiving injuries which caused his death. Elliott was employed as a transfer boy.

Ralph Ashby, of Rolins, Tenn., has bought the Reed brick plant at Geneva, O., and will place it in operation this fall.

The plant of the South Webster Brick Co., at Portsmouth, O., has resumed operations in full. H. M. Strong is general manager.

It is currently reported that the Enamel Vitrified Brick Co., of Toledo, O., contemplates the erection of a number of new plants at an early date.

President Daniel Reagan, of the Hocking Valley Products Co., members of the board of directors of the company and financial men from New York City, accompanied by General Freight Agent Dunham, Assistant General Freight Agent Wasson and Superintendent Connors of the Hocking Valley, together with L. F. Kiesewetter, cashier of the Ohio National Bank, made up a party which went by special train to Greendale, Hocking county, to inspect the big brick plant of the brick and coal company.

The new plant, which has been remodeled and practically rebuilt, is now in operation and is said to be the most complete brick plant in the country.

As the sale of the properties of the Columbus & Hocking Coal & Iron Co. and the old brick company will be made by order of court early in July, when the reorganization committee will bid in the properties and turn them over to the new company, the inspection trip was taken to get everything in readiness for the final details of the proceeding.

The new company will devote its attention largely to the brick industry.

The many friends of Mr. Fred Naugle will be pained to learn of his illness at his home in Bucyrus.

James E. Fox has been named as receiver for the Fox Clay Products Co., located in Washington Township, Ohio.

BUSY PITTSBURGH.

Pittsburgh, Pa., July 10.—With considerable home building throughout the country, the face brick manufacturers in the Pittsburgh district are being favored with some really satisfactory business. It is a well known fact that building brick made in the Pittsburgh district are shipped to all parts of the East, West, North and South. Some of the largest buildings in the West and Northeast are built of Pittsburgh brick, which of course speaks exceedingly well for its product.

Hollow tile manufacturers in the local district are very much interested in the building material tests which will be authorized in New York, at an early date. The cinder concrete people declare that ruin is staring them in the face, while on the other hand the manufacturers of hollow clay ware say that "it is bound to come their way."

This is what Mayor Gaynor of New York says on the subject: "Several committees have called upon me in reference to the difference of opinion whether hollow tile is better than concrete for building purposes, however high the building may go. I suggest that this matter be gone into very carefully and that no preference be given to either unless for undoubted reason, and the matter should be thoroughly gone over before the new building code is adopted."

The prejudice that has existed quite generally against fireproof dwellings of medium size is fast disappearing. It has been argued that to build a fireproof house of customary size meant the sacrifice of almost every attractive feature, but in the last few years, house designers have overcome that objection to such an extent that from now on fireproofing of average cost dwellings will greatly increase.

That a very handsome fireproof house can be built for reasonable cost is shown by the plans that have just been made here for the \$9,000 fireproof home for Charles B. Pfahl, president of the Standard Broom Co., which is to be built on Ben Avon Heights, at once. It is one of the most costly fireproof homes that has been ordered built in the Pittsburgh district this season.

The Meadville (Pa.) Brick Co. is the name of a new concern which has been formed by W. A. and M. E. Doane and others of Meadville.

The Rose Brick Co., at Sharon, Pa., has resumed operations with a force of about 50 men. The plant has been idle for nearly 18 months. Steady operations are now anticipated.

The Newport Pressed Brick Co. has been granted a perpetual injunction at Newport, Ky., against Carrie Plummer restraining the erection of certain buildings which would be a detriment to the brick company's interests. Such obstructions which have been built are also ordered by the court to be removed.

The Freeport Clay Products Co., which is owned and managed by Butler (Pa.) capitalists, is at work on its new plant, at Freeport, which will have a capacity of fourteen kilns. It is possible that at least six of the new kilns will be in operation by August 1.

Simon Kline, aged 81 years, a retired brick manufacturer at Reading, Pa., is said to be the oldest retired brick manufacturer in the United States. He was born in Pennsylvania May 14, 1830, and it was just 56 years ago that Mr. Kline and his brother Daniel started to make brick.

A new brick manufacturing plant has been started at Lewiston, Pa., by P. A. Barnett and V. N. Herbster.

The Dickinson Fire Brick Co., at Buena Vista, Va., will establish at a cost of probably \$25,000 a new plant for the purpose of refining paper clays. The industry is said to be a new one in that section of the country.

President H. Crawford Black, of the Mt. Savage Fire Brick Works, at Mt. Savage, Md., has accepted plans for a large addition to the plant, construction upon which is to commence at an early date.

The Montour Brick Co., a new Pennsylvania corporation, has opened a suite of offices in the Keenan Building, this city, which will be made the headquarters of the concern. The company has just been granted a charter, and is composed of Edward Friend, Thomas B. Freeman and Thomas E. Wilton. The plant of the Imperial Brick Co., at Imperial, Pa., has been bought. It has a capacity of about 800,000 per annum. General improvements are

to be made to the property, and common and face brick will be manufactured.

In nearly all counties in Western Pennsylvania street and roadway paving is being authorized this season by either the municipal authorities or the commissioners of the different counties. Because of this, all the paving brick and paving block plants in the district are in the midst of a season of activity.

With a capital stock of \$2,000,000 the Clay Products Co., of Jersey City, N. J., has been formed by T. F. Gregg and N. H. Raymond, of New York, and F. P. McDermott, of Jersey City. Fireproofing materials will be the leading line of manufacture of the new company, so it is said in the local district.

Scott A. White, a well known brick and ceramic product salesman of this city, with offices in the Lewis Block, has secured the contract for the ornamental tile to be used in the construction of the bank, store and office building which is being erected at Breckenridge, Pa., by the Merchants & Manufacturers Banking Co.

PUGET SOUND NEWS.

A friend from the Puget Sound district sent us the following interesting letter, giving a summary of the situation in the far Northwest:

The market here is all shot to pieces. The inland brick-yards, which heretofore had much the best of the existing business, are in a bad condition, some of them selling brick as low as \$4.00 at the yard. The yards that are situated so that shipping can be done by water and advantage taken of the cheap transportation to British possessions, have been doing the brunt of the business at a good profit, some of them selling as high as \$7.00 per thousand f. o. b. scows at yard, \$6.50 being the minimum rate. There is every indication that the abnormal demand from our sister country will soon cease for the following reasons: There is a big strike on which will do much to paralyze building; new yards are being put in, and the summer yards, which have not up to this time got on the market with their product, will be coming in, so you can see that the outlook is not very bright for the clay-workers in this section.

The Little Falls Fire Clay Co. will soon have its large paving brick plant, at Bayne, in operation. The new general manager has arrived, and will take charge right away. J. J. Koch, I understand, is to superintend the burning, but the general opinion is that the common brick market will suffer more by the competition from this plant for a while than the paving brick will.

The Lake Union Brick Co., which had a very strenuous time starting, is now doing very nicely. It has doubled its drying capacity by erecting six more tunnels and bought one hundred more dryer cars. This certainly is showing a very optimistic spirit when the market is in such a bad condition, but the president of this company, who has been wonderfully successful in the department store business here, will undoubtedly make it very interesting for all competitors.

The Steele & Steele Brick Co.'s plant has been sold and re-incorporated under the name of the Queen City Brick & Lime Co. It has changed its waste heat dryer into direct heat, and is contemplating the erection of a continuous kiln.

The Hill Co.'s plant has been shut down temporarily. This yard is one of the largest common brick makers in the state.

The Ballard Brick Co. still advertises its plant for sale. It has the finest common brick clay bank in the state, but the principal stockholder, I. M. Neutzel, who is a butcher, does not feel that he is competent to run the plant, hence his desire to sell same.

The Pontiac Brick & Tile Co., at Pontiac, which is twelve miles north of Seattle, has been doing fairly well, having only 400,000 brick in stock at the present time.

The Builders' Brick Co. has put up an addition to its plant and has installed an Eagle dry pan which was bought from the Mount Vernon Pressed Brick Co., of Mt. Vernon, Ill.

The Coast Clay Co. is building some down-draft kilns, designed by W. C. Mitchell, who was formerly with the Illinois Supply Co., and still later superintendent of the Denny-Renton Clay & Coal Co.'s plant at Renton.

Mitchell is now back at his old business of constructing engineer, and is certainly doing well, has a dryer to build for the Notch Hill Brick Co.; five down-draft kilns and stacks for same for the Port Heney Brick Co. Both of these companies are located near Vancouver, B. C.

The writer was informed only recently that the Denny-Renton Clay & Coal Co. are contemplating closing down their plant at Renton. This will indeed be disastrous if it occurs, as this is one of the largest individual paving brick plants in the United States, and owes its perfection as a paving brick institution to the great executive ability of the general manager, J. R. Miller, who had such a narrow escape from being killed by a premature explosion at the company's plant at Taylor, some months ago. We all felt relieved to hear of his recovery, as we consider him the clayworkers' greatest mainstay, always willing to help on anything that will benefit the clay industry.

On Thursday, June 15th, Frank Lohse, of the Lohse Brick Co., entertained the Seattle brickmakers with a chicken dinner, which was beautifully cooked and served by Mrs. Frank Lohse. It made us all feel prosperous for the time being even though business is bad. The different breeds of chicken were discussed quite extensively, as several of us know more about chickens than we do about the clay industry. Other breeds and brands got mixed in the general argument somehow. On the whole, we had quite an enjoyable time. There were present Mr. Gibson, manager Hill Brick Co.; W. T. Houlahan, manager Builders Brick Co.; Cecil Ridge, of the Lake Union Brick Co.; Mr. Niedergesaess, general manager Seattle Brick & Tile Co.; Mr. P. Rebhahn, sales manager of the same company; D. F. Power, president of the Pontiac Brick & Tile Co.; Mr. John McGrath, president Washington Brick & Tile Co.; Mr. Chas. Byers, manager Washington Brick & Tile Co.; and Mr. F. C. Harper, of the Harper-Hill Brick Co. Mr. and Mrs. Lohse undoubtedly deserve great credit getting such a large number of these fighting competitors together in harmony, even though it was only for a short period, and chicken had to be supplied as a bonus.

The next chicken feed will be at the home of our good-natured friend, Fred Harper. Everyone of us knows he will come through all right. Harper and Lohse have the two best breeds of chicken in the state. None of us can compete with them in that line. By the way, if it is not asking too much, we would like to have a representative of your magazine at the next dinner to report the happenings. We know he would enjoy it.

I have mentioned all the brick companies except the Lohse Brick Co. and the Washington Brick & Tile Co. The Lohse Brick Co. has been doing well, being one of the lucky yards situated on the water. The Washington Brick & Tile Co., being similarly situated, is also doing well, making paving block and selling them for common brick. Hard labor has been spent by numerous concerns offering this company inducements to change the size of their brick, but the time spent was wasted. The president comes of a stiff necked race from the north of Ireland; there is no necessity for saying more.

The other yards in the state reporting good business are as follows: Everett Brick Co., Everett; Goss Brick Co., Tacoma; Chehalis Brick & Tile Co., Chehalis. The Granger Brick & Tile Co., Granger, has sold more stock, purchasing ten acres more clay lands, and expects to start to work on a large continuous kiln next month, and also expects to build a dryer during the winter months. This concern has been ably managed and is eminently successful.

There are quite a number of prominent companies near Vancouver, B. C., that are "making hay while the sun shines." They are as follows: Clayburne Brick Co., Clayburne, B. C.; Coghlan & Sons, New Westminster, B. C. The last company is about the largest manufacturer of common brick in B. C. at the present time, having a capacity of 12,000,000 brick per annum. Their sixteen-chamber continuous kiln is working splendidly. Plans for same were furnished by the Builders Brick Co., Seattle.

The new company at Pender Harbor, in which Mr. Raymond Bond, of the C. W. Raymond Co., and the Brewster Brothers of Seattle are heavily interested, has started to make brick. It expects to get brick on the Vancouver market some time in July. There was a time when there was only one salesman in this district selling

clay-working machinery, but oh! what a difference now. Scarcely a day passes that one does not see some salesman hustling business among the different brickmaking concerns.

Ed. J. Shaw, of the American Clay Machinery Co., seems to be doing good business at present, also Raymond Bond, of the C. W. Raymond Co. There is also an old timer, Lew Thorne, a recent arrival, who is doing good work hustling for the Bonnot Co. The Fate Co. have deemed it necessary to put a man in the field, who has every appearance of being a good hustler, Mr. Davidson. This gentleman makes his headquarters with S. J. Geijsbeek, ceramic engineer, in the Blake-McFall Building, Portland, Oregon.

In and around Vancouver, B. C., seems to be about the liveliest place in the country just now. There are more plants being started and also more prospective plants than the writer could possibly mention. Just think of it, \$12 and \$14 per M. for common brick. No wonder they are starting brick yards. It makes a person's mouth water to think of such prices.

The terra cotta contract for the Dominic Burns building, Vancouver, B. C., has been let to Gladding & McBean, San Francisco, for \$60,000.

MICHIGAN.

The Vulcan (Mich.) Brick Works (W. J. Turner, proprietor) will have an active season this year as it is proposed to manufacture over 2,000,000 brick. There is a setting now in process numbering 250,000. The local works has become an enterprise of considerable importance, employing a force of 35 men; and from two to five carloads of brick are shipped every week. An order which will increase this rate is that for a million brick to be used in the erection of the new school building at Iron Mountain. The Vulcan product is a striking white, although it is believed that certain portions of the clay beds will burn a red hue, and the company is now experimenting along this line.

The Schneider Brick Co., Springwells, Mich., which has one of the finest brick plants in that section of the country, reports an excellent business.

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Table of Contents

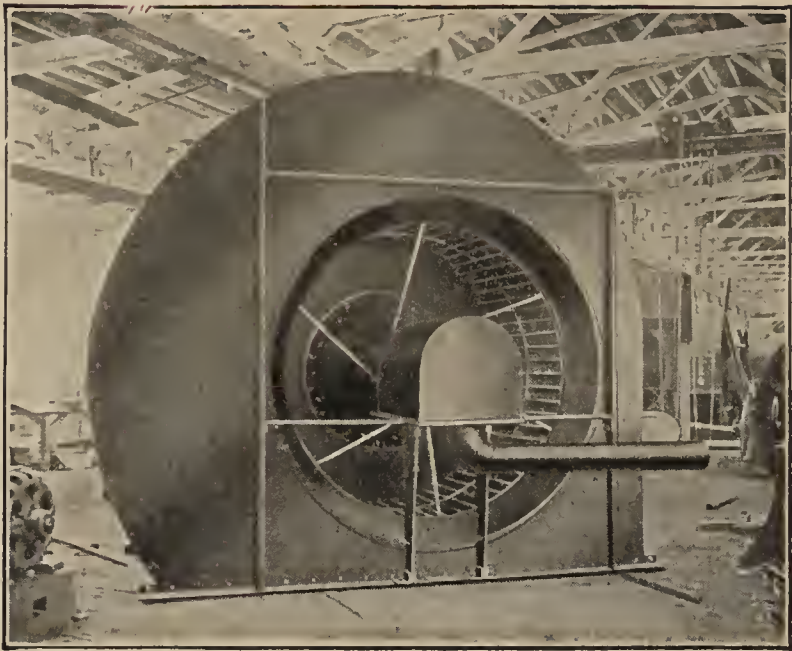
Page	Page
A Clay Knight.....Frontispiece	Model Oklahoma Plant..... 95
Cost System in Brick Selling, by Allen E. Beals .....81-82	Editorial Comment 96
Clay Man Meets Accidental Death..... 82	Paving Brick Department—Cracking in Cement Grouted Pavement—Paving News.99-100
Bradford Pressed Brick.....83-86	Drain Tile and Drainage—Farm Drainage..101
Furnaces and Fuel, by Ellis Lovejoy, E. M. 87-90	Fire Brick and Refractories—Green Point Fire Brick Co.—Pennsylvania Notes.....102
Midland Terra Cotta Works.....91-92	Sewer Pipe News—More About Pipe Prices.103
Freight Rates Reduced — Discriminative Freight Rates—Reducing Express Bills.. 92	Pottery News—Result of Joint Conference.104
Sweeping Reduction in Express Rates..... 93	Modern Brick Conveying.....105-106
Advertising and Its Results..... 94	Sand Lime Department—Statistics for 1910 —Good Demand in West.....107
Superintendents' Department—Brittleness in Brick—Silo Construction—Gravity Curve Transfer—Overworking the Pug Mill....97-98	Cement Mills Forced to Suspend.....108
	Trade Review—The Blue Grass Region—The Keystone State—Twin Cities of the Northwest, etc.109-116

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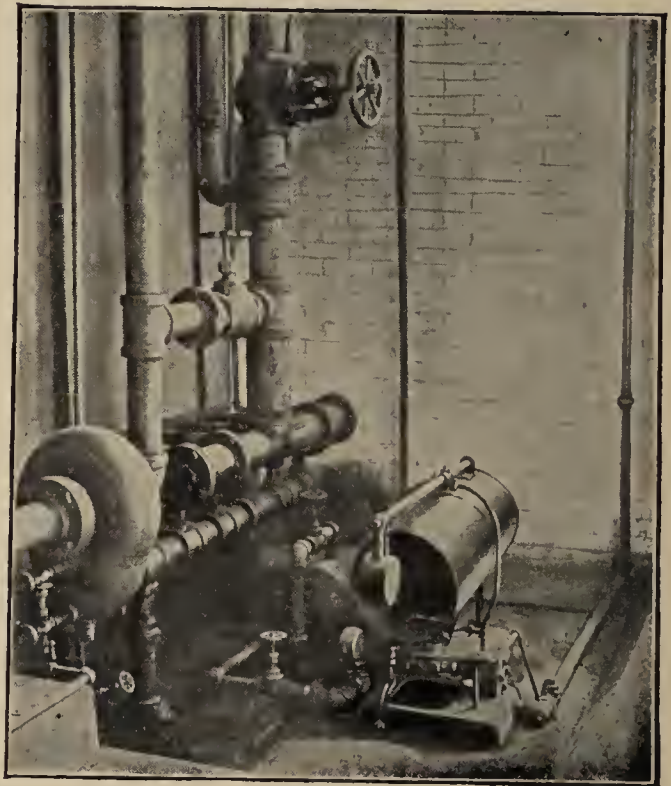
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THE CLAY KNIGHT

This illustration reproduces a very remarkable piece of Faience Work made by the Trent Tile Co., Trenton, N. J. The picture represents a Red Cross Knight, Hero of Spencer's "Fairie Queen," and is executed in hand-wrought faience mosaic tile. The illustration is loaned to us through the courtesy of the "Mantel Tile and Grate Monthly."



VOL. XXXIX—No. 3

BRICK

AND CLAY RECORD



AUGUST 1, 1911

COST SYSTEM IN BRICK SELLING

How to Know When to Cut Prices to Meet Competition and When to "Stand Pat"—The Difference Between "System" and "Red Tape"

By Allen E. Beals

Retail brick selling is accomplished in two ways. One is governed by system, the other by policy. The former enables the seller to have ready, accurate knowledge of what he is doing at all times, the latter is the foundation upon which the distributor decides to cut his price to meet a certain contingency, arguing that he has cut prices many times before and has lived to do it again.

The key note of all present-day, successful business is system, but much of it is not fully developed, because its principles are not generally understood. The addition of one or two extra clerks on the pay roll is the penny before the company's eye which hides the dollar behind greater opportunity. But there is a vast difference in systems, in general use.

System is over-done when it is made burdensome by complication, and complication is the result of unintelligent application of the basic element of all system, which is simplicity. System reduces cost; red tape increases it. Red tape, then, is system baked to a crisp.

Modern selling methods have introduced many factors into the cost item of the distributor. Advertising is only one of the overhead charges that have to be borne by the ultimate consumer. It does not take many of these "extras" to completely wipe out the meager margin left to the distributor today, and if he fixes his quotation on policy rather than on system, he may actually sell at a loss and not know it.

In New York the other day, practically every large common brick distributor bid for a big contract in the heart of the city. All wanted the business badly. It offered easy haulage from either river without hills and few traffic blockades. One bidder made his figures on his cost ascertaining system which allowed him a slight margin per thousand, with the wholesale market in its present condition. The prospects were for an advance. He lost the contract which went to another dealer who bid ten cents a thousand under him. The successful bidder got his contract on policy and is actually selling below what the goods cost him.

In this case the successful distributor is like the department store manager who sells under cost in one department and adds the difference in the price to some other article, in another part of his establishment, and creates a run on both by an advertising campaign, the cost of which is taken care of by boosting the price of a common commodity on some pretext or another, such as a strike of furniture makers in Grand Rapids, or the riot of champagne makers in France. The brick retailer said he had to keep his organization together and would make

up on what he lost by added profit on another job with practically no delivery cost.

It will be seen that the man with the system played safe in a bad season. Because his system tells him he is playing safe, he always clears a positive profit on every contract he takes.

The theorist will set down a stated rule and expect his followers to abide by it. No system is a rule unto itself. As every building material man involuntarily injects into his business his own personality, forming the back-bone of his success or failure, called "principle," so any system he may adopt must conform to that policy in practical application. The success or failure of the systems he installs, therefore, depends entirely upon how closely he weaves it into the fabric of his business.

Minute cost computation is not the science which writers in the popular magazines would have us believe it is. It is merely a matter of system, which any one can adopt. The manager of a department store has merely to push a button to learn in ten minutes just what it cost to make a yard of lace, to ship, to import, to advertise, to sell and to deliver it to the ultimate purchaser. Can the average salesman of brick figure his costs of selling, and buying for that matter, as closely as that?

He may know what it cost to manufacture a thousand brick and what the freight or towage charges are from kiln to yard, but the chances are he does not accurately know what it costs him to handle the brick once it gets into his hands and until he sells it and puts it on the job. Dealing usually in large quantities he becomes accustomed to figuring in the aggregate and trusts to luck to take care of depreciation and extra selling costs. His competitor may be able to carry his overhead charges cheaper, but the assurances are that the one who keeps a cost system at hand for ready reference is the one whose year-end inventory and balance will show the greatest profit.

Speaking of the average business of handling a staple commodity not protected by patents, a fair profit on gross sales for the year is figured at between 12 and 15 per cent by William A. Jordan, of Wilmington, Del., whose address on "Cost Systems" read before the National Builders' Supply Association in Chicago, in February, attracted almost nation-wide attention. He recently took charge of a cost system for the Charles Warner Co., of Wilmington, Philadelphia, New York and Boston and in his address he said that in view of the relation between

capital involved and gross sales the average material man should expect a return of from 17 to 20 per cent on the capital invested, since through natural investment channels capital can earn 5 per cent without business risk.

Now, then, the question to be considered is, which departments are carrying this profit and which are running behind? It may not be necessary to retrench in all departments, but this cannot be positively known readily, unless there is a complete cost system available for instant use. Here system is like the doctor diagnosing a case. He does not look at the muscular action of the neck or the leg for evidences of liver trouble. He looks at the white of the eye and the color of the tongue. If he finds the first yellowish and the latter coated, he does not put the leg in splints and a poultice on the neck. He knows at once what function is lagging behind and treats it direct. Furthermore, he may administer a little stimulant to help the remedial action along.

If the business man cannot tell exactly what department is ailing, it is a waste of money to try to stimulate the whole without first trying to correct the ailing part. Right there is where many an advertising campaign undertaken by a brick distributing company has failed. The advertising was in the nature of a general stimulant when the introduction of a system to ascertain just in which department the bracer was most needed was paramount.

Here is another point where the average brick and builders' supply company makes a mistake. Without an adequate system the balance sheet is seldom made except once, or perhaps twice, a year. If one department is going behind gradually, but surely, the manager ought to know it inside of thirty days. A little loss is soon forgotten; a big one may prove disastrously memorable. The adoption of such a system is the only safeguard to a positively profitable business, and progressive building material dealers are awakening to the necessity of "getting up-to-date."

This is what Mr. Jordan has to say about managing operating and expense accounts; describing, practically, the system that the Warner company installed:

"In order to properly collect and segregate charges against different departments or materials, we have adopted what we call a "Manual of Operating and Expense Accounts." This is simply to facilitate our work in distributing expenses for supplies, material and labor against the proper department. In a small business, distribution of expenses can very well be kept track of by name, although even in a business of small volume I believe a numerical system of expense account numbers can be used to advantage.

"In our particular case, we have several manufacturing plants and retail yards and it became necessary to designate each plant or yard by a letter. In the case of our Wilmington retail yard, the cost system, of which I shall describe, the designation is the letter "G." This manual of "Expense Accounts" is printed and placed in the hands of all foremen and clerks who may have occasion to use it.

"The general expenses of the yard, such as superintendent, clerks, watchman, office expense, minor injuries, repairs to wharves, railroads, fences, sewers, water mains, driveways, pavements, etc., are each designated by numbers G-1 to G-10.

"For example, on the payroll sheets, the salary of the superintendent is charged to G-1. A requisition on the storeroom for a bottle of ink is charged to G-3, office expense, while repair bills that might be incurred in repairing the wharves are charged to G-8. This enables us

to tell month by month how the general expense is running in its various subdivisions, and also what the total amount of the general expense amounts to each month.

"This general expense in turn is pro-rated over the ten or twelve productive departments (materials) on a percentage basis, based upon the volume of business as shown by gross sales. This is on the assumption that a department, doing twice the business of another, should bear twice the amount of general expense such as I have enumerated.

"Expense accounts G-11 to G-20 cover the selling expenses of the business, such as salesmen's salaries and expenses, advertising, dues and donations, rent of city branch offices, etc.

The group from G-21 to G-30 includes fixed charges, such as taxes, insurance, interest on investment, depreciation, etc. (The distribution of these fixed charges is handled in different ways according to the general business methods in vogue.) In the case of the Warner Co., we took the money-value of the sales in ten different departments and then called in the heads of departments and asked them if that percentage represented the proportion of general expense that should be borne by each department. In some cases this percentage was based on tonnage as the expense was not in proportion to the money value of the sales. This is a point which each one will have to determine for himself. The main point is that the general expense should be known each month."

This same idea is carried out in all departments and filings are made on printed cards in an indexed drawer for instant reference. The stock on hand is kept the same way; all requisitions on the storeroom are tabulated. Every possible item was included in these tabulations, even to "material lost" and on one piece of cardboard, to which the manager could refer at a moment's notice and know exactly the state of his business.

Space forbids a detailed explanation of the entire system employed by this company, but the foregoing illustrates the value of a system properly operated.

There are in operation in New York city today and, in fact, in every large community where modern business methods have compelled a change in old time, indefinite and unreliable methods of routine procedure, similar systems. But there are a great many yards which have possibilities of earning larger dividends for stockholders or owners if the element of selling costs was given the consideration it deserves. Old fashioned business methods cannot compete with modern ones and it is the man "with his eyes open," who is first in his community to recognize it.

CLAY MAN MEETS ACCIDENTAL DEATH.

Alfred E. Dickey, superintendent of the W. S. Dickey Clay Manufacturing Co.'s plant of Deepwater, Mo., was accidentally killed on July 14th, by falling from, and being run over by a dummy engine in the yards of the plant.

Mr. Dickey was a brother of W. S. Dickey, president of the company, and formerly Republican State Chairman.

Mr. Dickey was an expert in the manufacture of clay products and aside from his interests in the clay industry, held large mercantile and manufacturing interests.

WASHINGTON NEWS NOTE.

The Knapp Brick & Tile Co. are installing a plant at Sedro Woolley, Wash. The machinery and the steam dryer are being furnished by the American Clay Machinery Co.

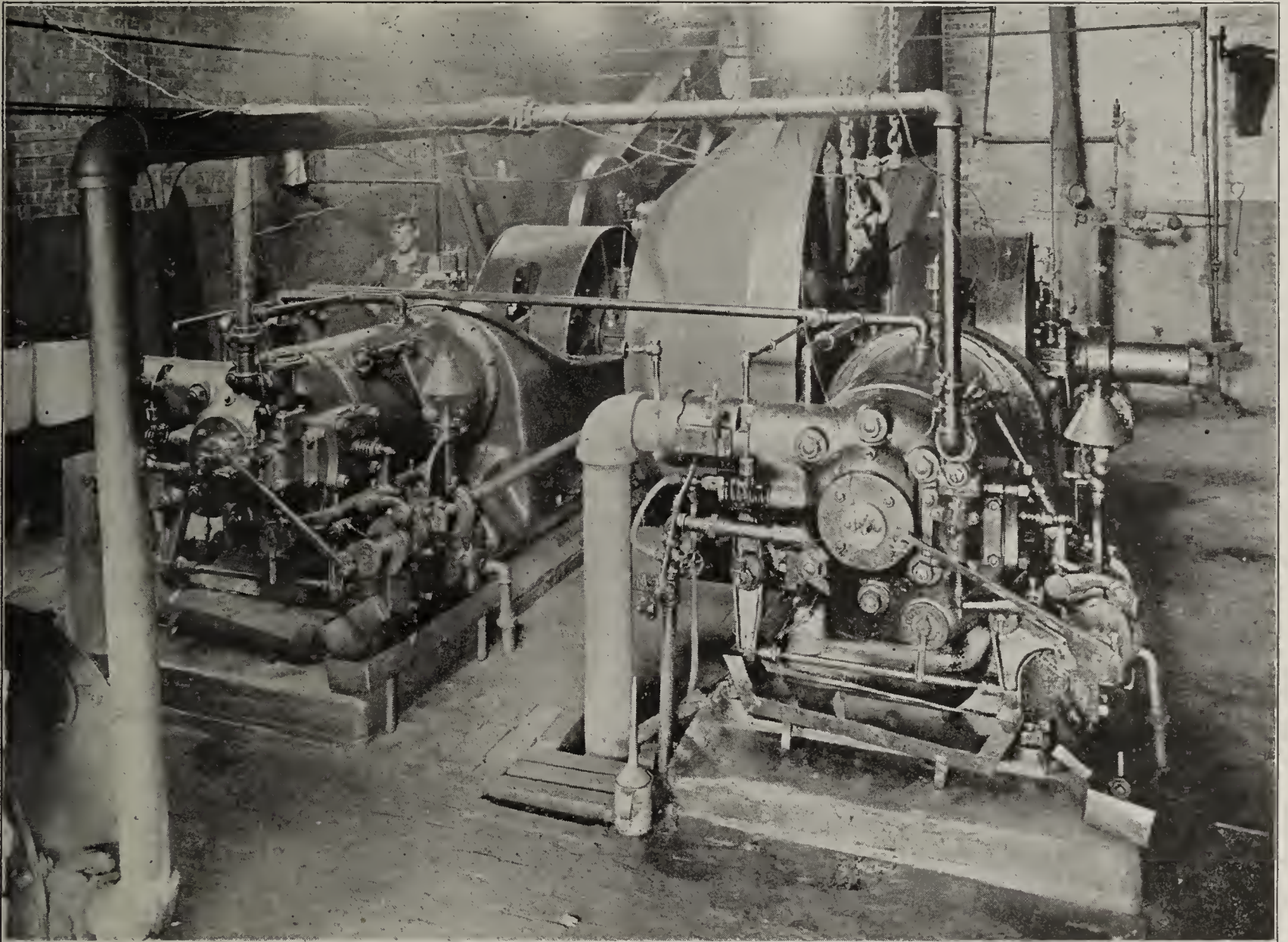
BRADFORD PRESSED BRICK

Economical Operation Effected by Use of Gas Engines at Two Large Plants of Bradford Pressed Brick Company

The two plants of the Bradford Pressed Brick Co. are located six miles south of Bradford, Pa., at Lewis Run, on both the Erie and the B. R. & P. Rys., and also on a high speed interurban road, in the beautiful valley known as the "Tuna Valley." The ride through this six miles of beautiful scenery is a real pleasure as the valley is in the midst of a fertile oil country. The stranger passing through the valley cannot but be amazed at the sight of many hundreds of oil derricks, which prove that the country is exceptionally rich in oil and gas. A rather unique condition exists at Bradford for the interurban

been spared to make the equipment the best procurable, and the kilns, stock sheds, coal tipples, etc., have been built in such a manner that they should stand for many years without repairs.

About sixty acres of rich clay lands provide an abundance of shale, the top stratum being green, the next red and the lower vein a bluish tint. This clay is worked by hand from the side hill, dynamite being used for blasting it. The clay is loaded into 1½-yard cars, of the firm's own manufacture, and is conveyed by the gravity system to the plant. This clay is worked to a depth



Powerful Otto Gas Engine at Yard No. 2 of Bradford Pressed Brick Co. In the Background Are a Small Gas Engine and an Air Compressor for Charging Air Tanks.

road reaches a terminal in Bradford, directly in front of the offices of the Bradford Pressed Brick Co. and the terminal at Lewis Run is within a stone's throw of the company's plant.

The "Bradford Reds" and Bradford Buffs" are the most popular grades of brick made by the Bradford Pressed Brick Co., and are acquiring a national reputation. Many builders and contractors desiring a high quality of brick, specify the Bradford pressed brick, thus insuring a high quality of face brick. "Bradford Pressed Brick" is a name which has been registered in the U. S. patent office since Sept. 12, 1905.

Plant No. 2 has a capacity of about 50,000 brick daily. It was built about two years ago, and is one of the most up-to-date brick yards in the country. No expense has

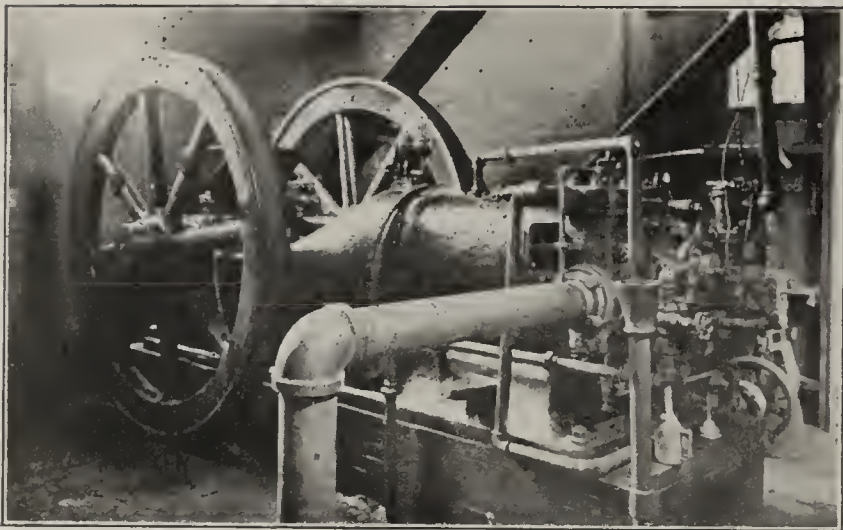
of about 35 ft. from the top of the bank. Frequently enough clay is shot from the top of the bank to secure a stock sufficient to last for several weeks. It is then permitted to remain on the ground or in the pit to weather for about three weeks. The clay is very rarely stored, except about 160 tons, enough for a day's run, are available should the bank not be in condition for use.

At this plant two 9 ft. American Clay dry pans and a Freese auger and pug mill have been installed. The crusher has a capacity of about 150 lbs. The clay is screened by piano wire screens of the Ohio Ceramic Engineering Co.'s make, and is elevated in 6x12-inch steel buckets attached to a 14-inch canvas belt. It is tempered in a 13-foot horizontal Freese pug mill with hot water, which is first used in cooling the cylinders of the

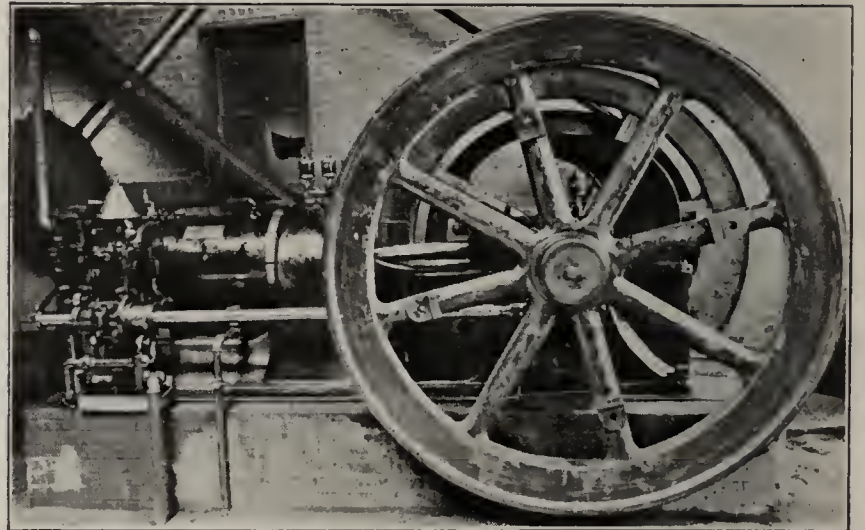
GLIMPSES IN BRADFORD PLANTS



Where the "Bradford Reds" Are Made. Original Plant of the Bradford Pressed Brick Co.



Eighty Horsepower Otto Gas Engine at Plant No. 1.



Sixty Horsepower Gas Engine Which Runs Half of Plant No. 1.



Shale Pit at Yard No. 2 of the Bradford Pressed Brick Co.



Sorting and Shading Face Brick in Stock Shed.



Off-bearing Crew at Work On Freese Machine at Yard No. 2.

gas engine. The stiff-mud system is used and the brick are cut by an automatic 24-brick cutter of the Freese type. Two hundred and thirty-five dryer cars with a capacity of 510 brick each, were supplied by the Ohio Ceramic Engineering Co.

The dryer consists of 8 tunnels of two tracks each, each holding 12 cars, so arranged that 97,920 brick may be dried at one time. This dryer was put in by the Freese Co. and is supplied with hot air returned from the kilns by a 180-inch fan driven by a 50-h. p. Otto gas engine. This is supplemented by an auxiliary furnace under the dryer, which is used about two days a week. The brick are dried on an average of 36 hours, after which they are set in kilns 26 high and five over two.

This plant has eight down-draft kilns 26 x 74 ft. with a capacity of about 140,000. They are supplied with McManigal grateless bottom furnaces and 26 cross flues and 6 flues extending the full length of the kiln. Coal is used for water smoking and burning. On an average of 55 tons per kiln is sufficient to vitrify the brick. Two days are required for water smoking and in five days the kiln is taken off.

Mr. Bird is the manager of this plant. He has been identified with the company for many years, and is always on the lookout for something new and original in brickmaking. The product of the No. 2 plant shows how well he has succeeded

Early in its business career the company was hampered by the lack of business experience and funds for working capital. In those days William Hanley, the present owner of the company, was only a small shareholder in the corporation. He afterwards purchased the interests of his associates and also brought additional working capital to the concern. The original capacity of only 8,000 brick per day has been increased, by the erection of an additional plant and the use of improved machinery, to ten-fold the original production.

The use of gas engines of the Otto Gas Engine Co.'s type has greatly increased the output of the plants and also effected considerable reduction in overhead expenses.

The first gas engine was installed under rather interesting conditions. Up to 1908 plant No. 1 had been run by boiler and steam engines, with natural gas for fuel. Both the boiler and engine were small for the work they were doing which resulted in the use of a large amount of gas, in order to produce sufficient power to operate the plant to its full capacity.

During the winter of 1907 and 1908, there was a shortage of gas in the Bradford district so that most of the yards were shut down completely and others were only able to run half capacity. The managers of the Bradford Pressed Brick Co. were desirous of trying out gas engine power but the fact that other yards in that territory had been shut down,



New Up-to-Date Plant of the Bradford Pressed Brick Co.

in this respect. He is assisted by Ira McDonald, who is in charge of the engine and machinery.

While the No. 2 plant of the Bradford Company is probably the larger, yet their No. 1 plant is quite as interesting from a technical point. All of the buildings at the No. 2 plant are of brick with the exception of the sheds, while at plant No. 1 the sheds are of brick and the other buildings are of frame construction.

The clay for this plant is obtained by the same method and from the same hill as for the No. 2 works. The cars of shale are pulled to the plant by cable but run from the plant back to the clay bank by gravity. The clay is ground in two 9-ft. dry pans of the American type, after which it is put through revolving cone shaped screens 8 x 8 ft. Dry pressed brick are manufactured at this plant, two Boyd four-mold dry presses being used, and about 16,000 brick per day is the output generally maintained.

The kiln battery at plant No. 1 is composed of ten down-draft kilns, constructed similarly to those at plant No. 2. The floors of the kilns are solid and gas is used for burning in summer and coal in the winter season. In setting kilns, the brick are set 22 high and five over two. At this plant two Otto gas engines of 80 and 60 h. p. supply the power. Standards, Romans and ornamentals in hundreds of shapes are made at the No. 1 plant, which is the original Bradford plant, the No. 2 plant being of later construction.

The Bradford Pressed Brick Co. has manufactured brick continuously since its incorporation about seventeen years ago.

frequently, because of the necessity of making repairs on their gas engines, caused them to be somewhat dubious as to making the change from steam and boiler to gas engine power. As it was necessary to operate its plants continuously, the company hesitated to make changes which would suspend manufacture. At that time it was costing \$7.00 per day for power to operate No. 1 plant at about half time.

The gas engine proposition was gone into thoroughly with the result that an 80 h. p. Otto gas engine was bought, installed and used to operate about half the machinery at No. 1 plant. The old steam engine continued to do service in operating the remainder of the plant.

Then the final test came, while the gas engine was operated at a cost of about \$1.25 per diem, fuel for the boiler and engine was costing \$7.00 per day, showing a saving of \$11.00 per diem by the use of the gas engine.

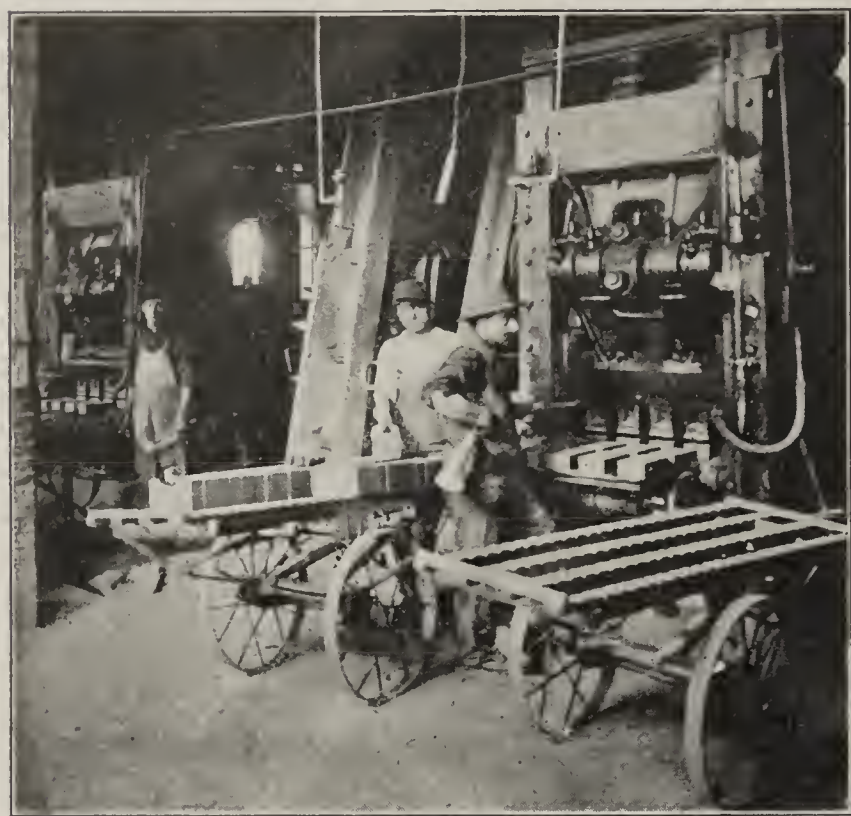
A little later the company threw out its steam and boiler power and installed another Otto gas engine of 60 h. p. capacity. Both engines have been in continuous operation since that time, and have given entire satisfaction with the exception of possibly one or two defects which were soon remedied. In fact, since the gas engines were installed in this plant, operations have continued with less delay than ever before.

About 12 months after these gas engines were installed, the company suffered loss by fire at this works and especially severe in the engine department. The tar roof and wood walls made an exceedingly hot fire. Contrary to expectations,

however, only external parts of the gas engine were damaged, such as springs and valves. Just as soon as these were replaced, the engines were started and are still in use.

Pressed brick made by this company are admitted to be unsurpassed for unfading color and uniformity of size. They are made in both standard and Roman sizes, and can be very readily matched in shade by ornamentals, which are always carried in stock.

One of the most interesting features about the No. 2 plant is the engine room, which is in charge of Mr. McDonald. In this room there is a large Otto gas engine



Chisholm, Boyd & White Dry Press at Yard No. 1.

with a rated capacity of 200 h. p., but which is capable of developing with natural gas 230 h. p. There is also a 50-h. p. Otto gas engine in this plant, which has a record for service, having been operated 24 hours a day and seven days in a week for months without stopping. This engine drives the fan which pulls the heat from the kilns to the dryers.

The company is also making a special feature of molded brick and readily copy special designs drawn by architects. All the company requires in this respect is full sized drawings for all special work. About five weeks' time is required to make delivery of special work after the receipt of plans, which is ample proof that the company makes a feature of promptness.

When the Bradford Company placed its impervious wire cut brick on the market, it immediately attracted the attention of architects and builders. Manufactured with the best machinery obtainable, and under the closest supervision possible, these represent the highest character of plastic brick the manufacturer can offer. Whether they are laid in either uniform or mixed shades a most attractive wall is the result.

The "Bradford Ruffs" are made with a rough texture face and the rustic effect established a new high standard in the building line. These "Ruffs" are used for all types of houses, but are especially attractive when used in the construction of garden walls and fences. Both the "Reds" and the "Ruffs" have become very popular for interior walls and columns.

One feature of the business that is developing rapidly is the making of brick for mantels. Red pressed brick

mantels are fast growing into favor, and because of this fact, the company has issued a brick mantel catalog, at the request of the architects.

It would really be a difficult matter to enumerate the many special shapes of brick made by this concern. Additions are constantly being made to the line, so far as shapes and sizes are concerned, and a good supply is kept in stock, so that there is little delay in shipping upon receipt of order.

The method of storing the "Reds" and "Ruffs" is only another proof of the fact that the company has reduced its business at the plant to a real system. When the brick are taken from the kilns into the warehouses, there is no jumbling of stock. There are only two rows of brick on a wagon, and the wagon is pushed to a "sorter's" stand. First the "sorter" brushes all dust and particles from the brick, then they are shaded. Extreme care and a critical eye are necessary in doing this work. The eye of the "sorter" is trained, but on the stand near at hand are samples of the different shades, and when he is in doubt about one color, a model brick is taken from the stand and carefully compared with the sample. By this system all possible chance of a mistake in color is eliminated.

Each pile of the various shades of brick in the warehouse is numbered, and the "sorter" takes one brick of one shade, places it on top of others of similar shade on the wagon; the proper number is marked on the wagon which is wheeled away, and here and there the different shades are distributed, according to the number marked on that particular wagon.

Upon the receipt of orders, the utmost speed is used to make prompt shipments. Superintendents and shipping clerks are given instructions, cars are placed and the packing crew is set to work. The loading of a car of Bradford Pressed Brick is done with extreme care, baled



Dry Pans in Operation In Grinding Room.

straw being used for packing and every effort is made to insure the delivery of a car without a single brick being "nicked." Rare indeed are complaints that a shipment of brick has been received in bad condition. So much for care in packing a car of brick. It pays.

In the manufacturing of Bradford Pressed Brick, the clay is worked from the bank direct through the plant to the cars. There is not a retracing of steps in a single instance. "Forward," always, is the march of the raw material.

The officers of the Bradford Pressed Brick Co. are: William Hanley, president and treasurer; A. M. Bird, vice-president and secretary; and E. F. Knight, sales manager.

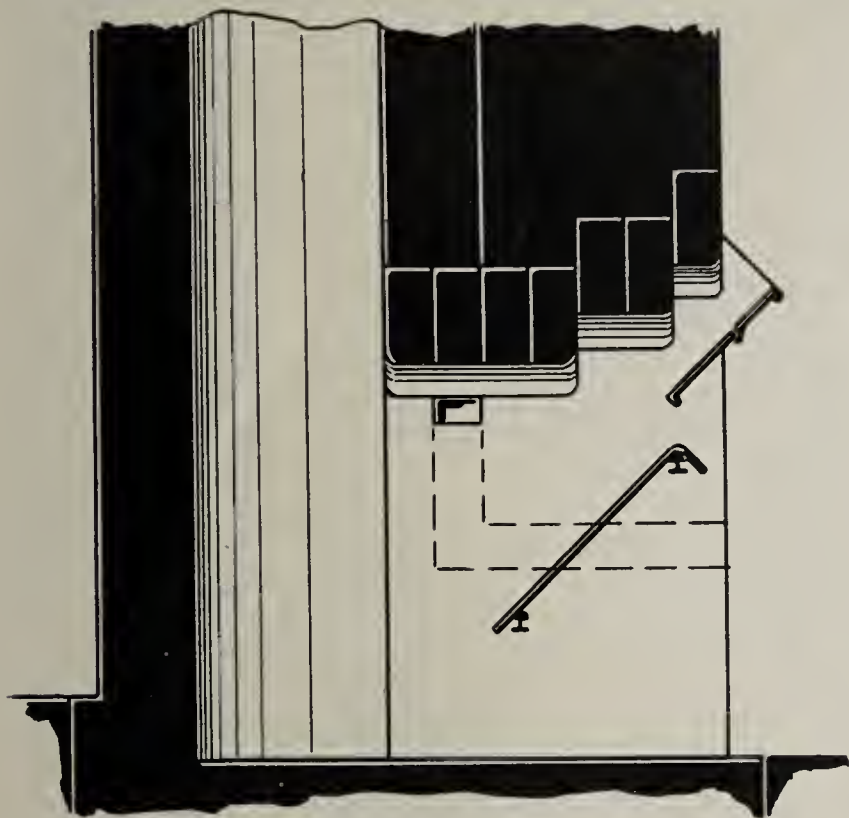
FURNACES AND FUEL

Waste of Fuel and Imperfectly Burned Ware Often the Result of Poorly Constructed Kiln Furnaces

By Ellis Lovejoy, E. M.

No other industry is so far behind the times, in its use of fuel and so wasteful of it, as that of the clay industry. We are proud of our ancient lineage, but we should be ashamed of our lack of progress in many details of the work, and especially of our wastefulness of valuable fuel which can never be replaced.

To save a few cents per thousand in grate bars, perhaps,



Inclined Bar Furnace.

we thrust into the furnace dimes' worth of fuel per thousand for which we get no return. To save a few dollars in initial kiln construction we waste ten, twenty, thirty per cent of the cost of the kiln each year in fuel, and wonder why there is so little profit in the business.

We do not propose to discuss the different types of kilns, because the kiln must be adapted to the ware, and present types must be used until something better is devised. The continuous kiln is very economical in fuel consumption, but in its present development it is not universally adapted to clay products.

Germany has made much greater use of the continuous kiln than have we in this country, because it has greater need than we at present have, but it is not universally used in that country by any means.

The large up-draft kiln in connection with coaling the brick has charged to it a low fuel cost, but its use is limited to one kind of ware.

The down-draft kiln has wider application than any other type, and it is in this kiln that we have greater fuel waste than in any other.

We should have said, perhaps, the crowned periodic kiln instead of down draft, because we would include the crowned up-drafts, the muffles, the up and down-drafts, as well as the simple down-draft in the same category.

It is not our intention in this article to discuss the waste of kilns in general, because that would lead us into too long a road for the present article, and would include construction and arrangement of the kilns, and the general operations, radiation losses, etc.

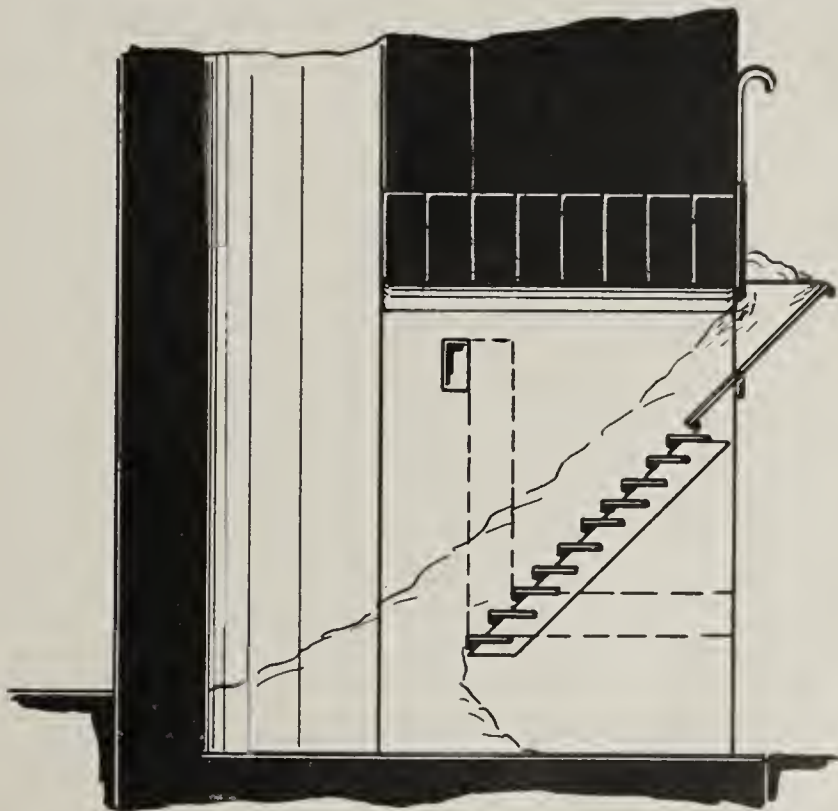
These may be taken up at a later time, but at present we will confine ourselves to the furnace of the kilns, which in itself covers a broad field, to which the clayworker should give earnest study and investigation.

Kiln Furnaces.

On many yards which we visit professionally, we find a good to fair power equipment, an economical drying system, but when we come to the kiln we find the reason for the call for "help." The kiln, which is the most important feature of the factory has received the least consideration. A mere hole in the wall is considered adequate for the furnace. There may be some reason or excuse for the poor kiln equipment, since many factories are built without any conception on the part of the owner as to the cost, and when it comes to the construction of the kilns, the depleted treasury calls a halt; but this does not apply to the furnace, which is not a feature of large expense, and should be built on economical operating lines.

On one yard that came under our observation, as the burner began firing, we counted the shovelfuls. He started opposite us putting in seven, then nine, then eight; further around thirteen, and finally fourteen. We appeared as the last scoopful went in, and saw the burner skillfully throw the bottom of the scoop against the furnace mouth to keep the last load from falling out. The furnace was an ordinary flat-bar furnace, not over fourteen inches wide, and was filled from end to end and to the very top of the arch.

"Thought you were loading a cart," we remarked to the



Step Grate Furnace.

burner, who replied, "Naw, that's the only way you can get heat enough to burn them bricks."

Poor furnaces, they certainly had indigestion, and the kiln literally vomited smoke and unburned gases, which hovered over the yard like a pall. The business was not a success and for no other apparent reason than mismanagement of the kiln furnaces.

Clinkers Cause Poor Combustion.

On another yard we noted in dead bottom furnaces a mass of clinkers in each furnace, which had been rolled out just to the mouth of the furnace and filled at least three-fourths of the free air space, while the fires were choking for air. In another kiln, evidence of poor combustion was plainly seen in the blackened and blistered reduced product.

The gases being unable to get air, in the furnaces, took oxygen from the minerals in the ware, leaving clinkers instead of clean ware.

The coal used clinkered badly, and the dead bottom furnace was not adapted to it because of this.

One cannot control the air supply through an irregular mass of clinkers. The dead-bottom furnace has its uses, but should not be used with a badly clinkering coal, especially when high grade ware is desired.

In another instance, with similar furnaces using very dirty coal, whenever the fireman thought the fires needed more air, he would take a clinkering bar and break holes through the mass of clinkers. Twice a day the whole mass was cleaned out, the furnaces cooling to blackness meanwhile, and following the cleaning were filled to the top with fresh fuel. After several hours the kiln would regain the heat lost during the clinkering, by which time the punching process would begin again and continue until clinkering time arrived.

The other extreme was in a yard burning lignite coal in a broad flat grate bar furnace, and before each firing time came around the charge of thinly bedded, highly combustible fuel would burn completely out, in places, leaving black spots of practically uncovered grate surface through which air was unnecessarily finding its way. A lot of air was being heated, drawn over into the kiln, and passed back into the open again without any value having been received from it.

An excess of air means as great if not greater fuel loss than insufficient air.

The latter furnaces should have had a smaller grate area and a deeper fuel bed with perhaps a coking table, or better still, a step grate with a hopper feed which would have insured a continuous supply of fuel and the air supply could have been under better control. The fuel bed would have been deep and in some measure the furnace would be a semi-gas producer.

We do not like to see furnaces driven beyond their limit in order to get the last degree of heat necessary. There is something wrong with the outfit when such practice becomes necessary. We like to see fires coaxed,—it is a pleasure to coax them and they readily yield to it.

Apparatus for Analyzing.

In order to work out the problems of combustion, some apparatus is necessary. Clayworkers cannot progress in economies until they recognize the value of such apparatus, put it in, and make constant use of it.

We can say this with good grace, since we are not interested in the manufacture or sale of such apparatus, and speak purely from an engineering standpoint.

Every yard should have an apparatus for gas analysis. It requires no great skill to operate the instrument in determining the carbon dioxide, which is all we need to judge of the efficiency of the furnace.

If the gases should show fifteen per cent of CO_2 and only show five per cent, it does not need a scientist to tell the clayworker that he is not getting full value from his fuel.

Instruments are now on the market which automatically sample the gases, analyze them and make a record of the analysis. Modern power plants are equipped with these automatic instruments and the records of the machine are watched as closely as the steam gage.

Unfortunately, this instrument is not applicable to brick kilns, but a simple Orsat apparatus with one burette for carbon dioxide is not a complicated instrument and should be in continued use on every brick yard.

It is not intended to digress from furnaces to testing instruments, and we will return to the subject.

Furnaces Adapted to Fuel.

Dirty, badly clinkering coal should be used in a furnace which can be cleaned readily and one in which the cleaning can be done with the least reduction of the fires.

If the fuel is low grade the furnace must be proportionally larger, or there must be a greater number of furnaces.

If the coal contains considerable slack, the fuel bed must be shallow in order to get the air through it, and the bars must be closely spaced in order to retain the fuel, or if it is bituminous and coking, a coking table becomes a decidedly advantageous feature of the furnace, but when the coal is non-coking and highly gaseous, the ordinary coking table is of less value and instead a hopper step grate should be used, which gives a deep fuel bed, which such fuels require, and at the same time gives a kind of progressive coking effect.

The advantage of the coking table is first to consume the volatile gases and prevent the formation of smoke and second to collect the fine coal into coke for combustion on the grates or dead bottom as the case may be.

In connection with slack coal the forced draft systems are worthy of consideration. By this method, the fine coal is lifted and the air forced through it and if the system is properly designed there will be a uniform supply of air all over the furnace grate.

The air should be distributed in jets to all parts of the grates, and not by a uniform pressure under the grate bars. In the latter case, wherever the fuel bed is thinnest or most permeable, the air will flow under the pressure behind it and the combustion will be excessive at that point and very little in the other parts of the grates.

Semi-gas furnaces should be used where high temperatures are required. Such furnaces have the progressive coking effect and the gases must pass over the incandescent coals before they can escape into the bags. They have the deep fuel beds which permit the use of some water gas, and the grates can be cleaned without letting down the fires by using temporary supporting bars.

It may be remarked that higher temperatures can be obtained with a slightly reducing furnace temperature than with perfect combustion, which would require some excess of air.

Furnace Adapted to Ware.

In burning wares requiring natural colors, the furnace should be one in which the air supply can be best regulated, in which there is an excess of air, and in which the combustion is practically complete in the furnace. Unburned gases going over into the kiln will take toll of the oxygen, in the ware, resulting in discoloration of the ware due to reduction.

The air excess, however, must be a minimum, else the fuel consumption required to heat the excess air will be large, which increases the cost of the ware. For such work the flat bar furnace with a coking table is undoubtedly best, and practical ducts must be built to introduce secondary air.

Burning Delicate Wares.

Very delicate wares (those that discolor easily) can best be burned with double flat bar furnaces.

Such furnaces are fired alternately and the intense heat of the one will burn the unconsumed gases of the other,

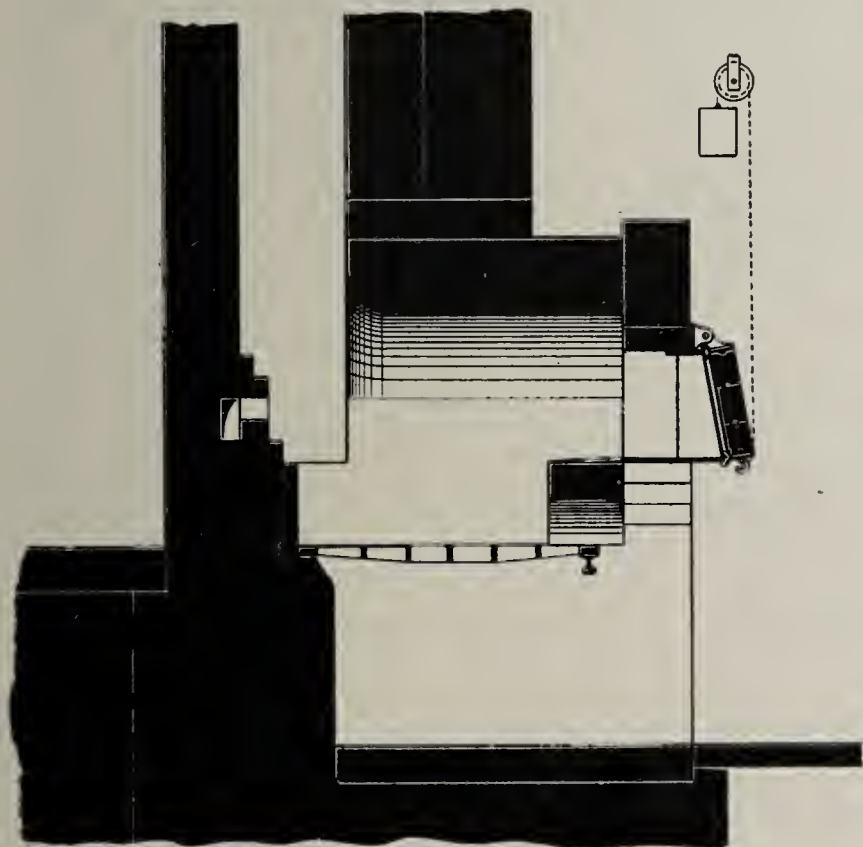
and each will hold the heat while the other is being clinkered. The total air excess can also be kept to a minimum. We know that when fuel is freshly put into the furnace there is a large volume of gas given off, and for a short time the gas analysis will show very little excess air. As the burning progresses the air excess will increase up to the next firing time, but with the double furnace, while one side has the temperature and excess air, the other needs them, and vice versa.

We would not expect to use such a furnace in burning a ware in which the discoloration effects, fire flashing, etc., were desired, but rather would select one in which there would be some unburned gases going over into the kiln, either with or without accompanying air, according to the degree of flashing desired. Moreover, since flashing is always best with a high temperature, the furnace should be such as to readily give the required temperature.

We probably can get the heat to the bottom better, and get more uniform burns with some reducing action than with an excess of air. In the one case the combustion is practically complete in or near the furnace, while in the other case the combustion may take place well down in the ware where it is most needed. The nearer the combustion takes place to the ware, the more quickly the burning can be done and with the least amount of fuel.

There is danger, of course, of getting too much reduction, but this does not affect the question of the proper selection of a furnace, but rather belongs to the proper operation of it.

We have seen brick burned hard in up-draft kilns almost to the plating, by firing the furnaces heavily and then closing the doors to shut off the air supply.



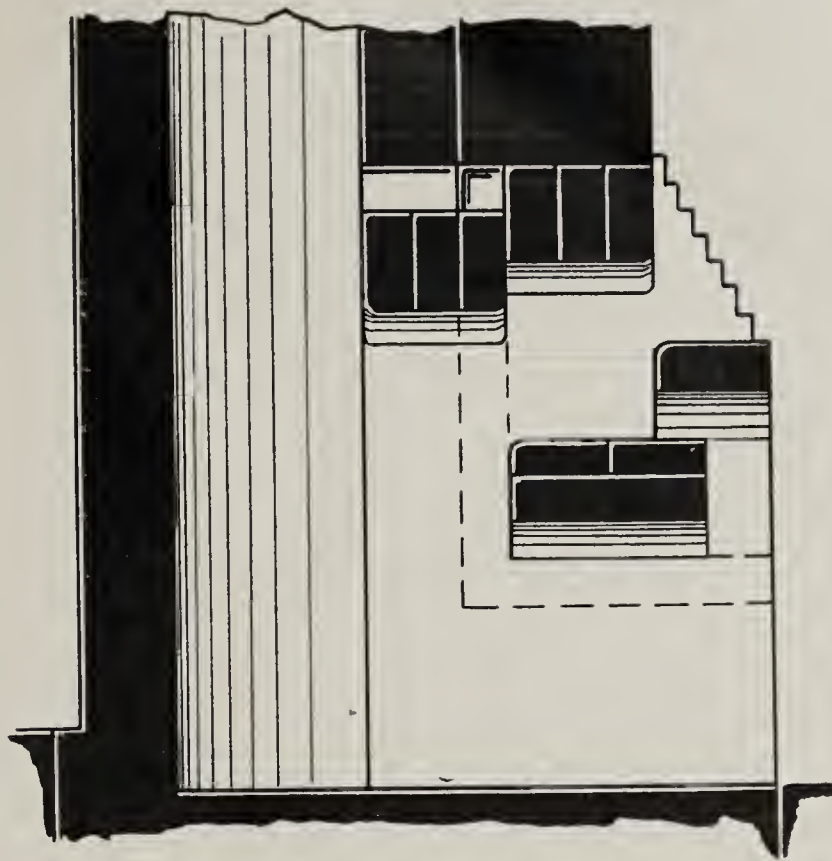
Grate Bar Furnace with Coking Plate.

The unburned gases would escape in the kiln and burn in contact with the ware, getting the air supply largely from leakage, together with oxygen from the brick which were burned a chocolate brown.

The furnace for a sewer pipe kiln is a problem in itself, especially with clays containing iron which come out in black spots through reduction. The reduction could be avoided largely, if the highest type of flat bar furnace were used, but such a furnace is not adapted to salting in the same degree as the customary sewer pipe kiln furnace. Economy of fuel also comes into the sewer pipe problem.

Relation of Furnace and Kiln.

The relation of furnace and kiln should be carefully studied. Said one, "If we could, we would put our fires at the top of the bags and have a ring all around the kiln." He was wrong, not in the ring idea but in its location at the top of the bag. We have learned that if we wish to get the heat to the bottom of the kiln, it is better to have the fire level below the kiln floor level. In the economy of fuel it is desirable to have the combustion take place as close to the ware as the desired results will permit, but it must be remembered that we are trying to get the bottom



Dead Bottom Furnace.

of a column of clay ware as hot as the top, and the location of the furnaces must be modified to assist in getting the heat to the bottom. The distribution of the heat in the kiln is beyond the province of this paper, and we will not go into it.

In the matter of the proper size of furnaces, there is no well established engineering data. The author worked out a "rule of thumb," which has already been published and will not be repeated, but it has served as the basis in our practice.

If clayworkers would collect accurate data in regard to their fuel consumption and present such data at the several conventions, the result would be greater economy in fuel and the business would be put on a more practical competitive basis with other industries.

We should have the size of the furnace, the type, the free grate area, the character of the coal, the heat required to burn and the amount of fuel per ton of ware.

The Germans do this a great deal more than we in this country, and the German practice is in many respects far ahead of ours.

Engineers get a good deal of this kind of data but, of course, are not permitted to publish it; the clayworkers must present it themselves.

We sometimes think the reason that more of this kind of data is not presented is because we are ashamed of our practice, and we have seen many yards of which we might well be ashamed on account of the wasteful methods in vogue there.

It is impossible in a paper of this kind to give all the modifications which must be taken into consideration in de-

signing kilns and furnaces, but it serves to illustrate that they cannot be "cut off by the yard."

The following table which was tabulated especially for this paper, shows the effect of air supply and radiation upon kiln temperatures. The first column does not take into consideration any kiln losses, and shows the maximum furnace temperature which can be obtained from the fuel. The other columns show temperatures obtainable with radiation losses of 10%, 20%, etc. 100% air is perfect combustion. The fuel selected for the test is an average middle west bituminous coal.

The ultimate analysis of the coal is as follows:

Hydrogen	6.79
Carbon	65.48
Nitrogen	1.39
Oxygen	15.04
Sulphur	1.72
Ash	9.58
Total	100.00

The temperature for 100% of air and above are correct since we are dealing with completely burned gas, or rather coal, but the temperatures for less than 100% are only relative and are on the assumption that the hydrocarbons and hydrogen are completely burned and that carbonoxide is the only unburned gas, which is not the case.

Where the air supply is insufficient, the products of combustion will contain hydrocarbons, hydrogen, and carbonoxide, together with carbondioxide, and the actual temperature will vary somewhat as these gases vary in quantity. If we were dealing with pure carbon, not considering the cracking of the carbonoxide which always takes place in some degree, 50% air, or half enough for perfect combustion, would burn all the carbon to carbonoxide. When, however, we take out enough air to completely burn the hydrogen, we find that 60% air is practically the limit in the coal in question.

In other words unless we had at least 60% air, some carbon would not burn at all, and the fires would simply smolder. What really takes place with insufficient air is partial combustion of the hydrogen, of the hydrocarbons, of the carbon to carbonoxide, and cracking of the latter gas into carbondioxide and carbon, the latter being deposited as soot, which makes the problem, below 100% of air, impossible to calculate.

The temperatures, therefore, below 100% air are simply illustrative, while those above 100% may be taken as correct. However far the temperatures below 100% may be from the truth, they illustrate nicely the fact that beginning with 100% we get higher temperatures with insufficient air than with a corresponding excess.

The falling off, below 100%, is more rapid than above and we soon reach a point where the under supply of air falls below that with the corresponding excess.

In practice, we have often been able to finish a kiln and get the last degree of settle by shutting off the air supply and burning with a slight reducing atmosphere and the table explains the reason for it.

Air%	Radiation Loss.					
	None	10%	20%	30%	40%	50%
60	1338	1219	1098	975	850	720
70	1617	1480	1339	1193	1042	886
80	1755	1610	1459	1303	1143	974
90	1861	1708	1553	1390	1219	1041
100	1943	1787	1625	1456	1280	1096
110	1832	1682	1528	1368	1200	1025
120	1730	1589	1441	1287	1127	963
130	1642	1504	1363	1216	1063	900
140	1561	1429	1291	1152	1005	855
150	1486	1360	1229	1094	955	811
160	1419	1296	1171	1041	908	773
170	1357	1239	1118	992	855	
180	1298	1186	1069	949	826	
190	1246	1135	1026	908	788	
200	1201	1090	983	871		

The above temperatures are given in Centigrade degrees; to change to Fahrenheit multiply by 1.8 and add 32. Neither sulphur in the coal nor moisture in the air are taken into consideration since both are variable quantities. Sulphur would increase the above temperatures and moisture would lower them, one thus in some measure off-setting the other. Moisture in the coal is not considered,—if burned to water gas and reburned it would not affect the temperature, but if driven off as vapor, the temperatures would be lower.

Temperatures which can be obtained from coals will vary with the coal, but a wide range of bituminous and semi-bituminous coals will give temperatures within 100% of the temperatures in the above table.

In order to calculate the above table it was necessary to determine the volume of gases for each condition and from this same data we have estimated the percentage of carbondioxide which the products of combustion would contain, as follows:

100% air, gases contain	15.9% carbondioxide
110% " " "	14.5% "
120% " " "	13.4% "
130% " " "	12.4% "
140% " " "	11.6% "
150% " " "	10.8% "
160% " " "	10.2% "
170% " " "	9.6% "
180% " " "	9.1% "
190% " " "	8.6% "
200% " " "	8.3% "
300% " " "	5.5% "
400% " " "	4.2% "

If the flue gases show 15.9% carbondioxide the combustion of this coal would be perfect, but the maximum figure will differ with different coals, and in order to make comparison with the actual analyses it should be calculated for each.

Since air contains by volume 21% oxygen and 79% nitrogen, and since one volume of oxygen when burned with carbon will give one volume of carbondioxide, perfect combustion of carbon in air would give resultant gases containing 21% carbondioxide.

It is evident that during part of the time the combustion was very bad and that the fuel loss was excessive, while at other times the work compared favorably with the general average of brick yard practice.

From another plant we take the record of 9.3%, 13.8%, 10.3%, 5.1%, 4.5%, 3.7%, 13.4%, showing good and bad work.

The bad work results in loss of heat or at least does not advance the temperature and all the coal fired during that period is absolutely wasted, besides the time and labor.

When clayworkers come to a full realization of these facts and the importance of correcting them, there will be a general advance in our brick yard methods.

We hope the time will come when we can speak of furnaces in terms of power, furnace power, just as we have boiler power, electrical power and hydraulic power.

We will then know just how much coal of a certain quality can be completely, or almost completely burned on a given grate area, and how much heat this will give us in the kiln, and how many feet of grate area must be put in to burn any ware with any coal to a certain cone temperature.

A few clay manufacturers have collected some data and have a well defined basis upon which they are working, which they are adding to and correcting as their experimental knowledge increases, but the majority of furnaces are built because they are used on some other yard, regardless of any knowledge of economy or of conditions in the new situation.

MIDLAND TERRA COTTA WORKS

New Chicago Plant Equipped with Machinery Especially Designed for the Manufacture of Terra Cotta

On the western outskirts of Chicago at West 16th St. and 54th Ave., on a level tract of twenty acres of prairie land, is located the splendidly planned and well equipped plant of the Midland Terra Cotta Co., whose offices are at 523 Chamber of Commerce Building. The B. & O. C.

the hot air system, after which they are set and burned in one of the eight special down draft kilns, 24 ft. in diameter.

Coal is used for burning the ware, which on being removed from the kiln is placed on a 12-ft. rubbing bed,

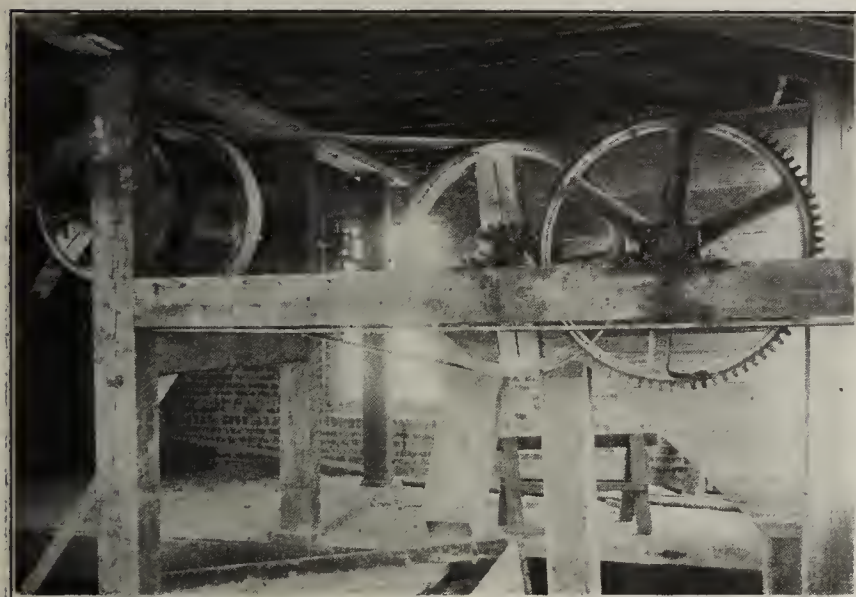


New Plant of the Midland Terra Cotta Co. at W. 16th St. and 54th Ave., Chicago.

T. Ry. affords excellent facilities for shipping the finished product as well as for bringing in supplies.

The buildings comprising the plant proper are of substantial brick construction and cover over 50,000 square feet of floor space.

Architectural terra cotta in a large variety of shapes,



Material Being Dumped From Elevator Head Onto Shaker Screen.

finishes and colors is the only product manufactured by this company, the material used being shale, shipped in from various points in Indiana.

The shale is stored in sheds at the plant until ready for use. It is pulverized in a 9-ft. American dry pan; elevated by bucket elevators to the special horizontal shaker screens, manufactured by A. L. Schultz & Son, then discharged into hoppers. From the hoppers it goes to the mixing floor from which it is discharged into a No. 1 pugmill, which is about 18 ft. long, then directly into a No. 2 pugmill, which is a special horizontal pugmill made by the Schultz Company, especially for the manufacture of terra cotta.

After being tempered and grog added, the material is discharged into store rooms and carted on small trucks to the pressroom, where it is formed into the shapes required. The shapes are dried in a dryroom, heated by where the ends are ground for a perfect joint. The fin-

ished pieces are taken to the fitting room, where they are prepared for shipment either by rail or team.

A splendid 150-h. p. corliss engine with 50-h. p. direct connecting generator and a 225-h. p. Murray boiler comprise the power equipment. Among the other equipment used in the preparation of the material is a No. 3 Champion crusher.

While the machinery for this plant was made by various companies the plant was built and the machinery installed by the firm of A. L. Schultz & Son, much of the machinery having been designed and made by them for the especial requirements of the Midland Terra Cotta Co.

The architectural terra cotta made by this company is meeting with ready favor among architects and builders, and the company sees a bright future if present prospects are fulfilled.

Work on the plant was started about a year ago. It is



Special No. 1 and No. 2 Pug Mills in Use at the Midland Terra Cotta Plant.

expected that it will be run continuously during the entire year.

The officers of the company are: Wm. G. Krieg, president; Alfred Brunkhurst, vice president, and W. S. Primley, treasurer.

An Ad in the Classified Department will Reach the Man you are after—he reads "Brick and Clay Record."

FREIGHT RATES REDUCED.

After a fight for some years, freight rates on brick on all railroads in Wisconsin have been ordered reduced by the railroad commission at Madison, the reduction amounting to practically one-third of the rates formerly in force. This is a great victory for the Wisconsin Clay Association,



Boiler Room at the Midland Terra Cotta Works.

which has been striving for years to secure a reduction in the rates which formerly were unreasonably high.

Probably no order of the commission within a recent period has been as sweeping in its jurisdiction or in the extent of its reduction. For instance, the fifteen-mile rate, which was 3.5 cents, is reduced to 2 cents per 100 pounds; the twenty-five-mile rate from 4 cents to 2.3 cents; the fifty-mile rate from 5 cents to 3.5 cents; the seventy-five-mile rate from 5.5 cents to 3.7 cents.

The rates ordered by the commission per hundred pounds in cents range from five miles or under at \$1.70, increasing at the rate of 15 cents for each five miles up to fifty miles, and 10 cents for each five miles up to 100, making the latter \$4.20.

Minimum weight is fixed at 50,000 pounds per car, except that in cars of less than 50,000 pounds capacity the marked capacity shall be the minimum rate. It is ordered that the roads make effective between their various lines for distances up to and including 100 miles joint rates 1 cent per 100 pounds higher than the above rates.

DISCRIMINATIVE FREIGHT RATES.

There seems to be a general movement on foot among clay manufacturers in the various states to secure a reduction in freight and express rates, which have been exorbitant and in some cases discriminative. Our Louisville correspondent informs us that a brief hearing was held in that city July 20th on the complaint of Kentucky and Ohio brick manufacturers, operating in Ashland district, against railroads running into the South, discrimination in rates in favor of St. Louis being charged. The hearing was the continuation of that which was held last March at Ashland, Ky.

Among the complaining companies are the Ashland Fire Brick Co., the Kentucky Fire Brick Co., the Charles Taylor Sons Co., Olive Hill Fire Brick Co., Davis Fire Brick Co., Ohio Fire Brick Co., and the Pyro Clay Products Co.

Among the defendant railroads are the Louisville & Nashville, the Southern, Chesapeake & Ohio, Norfolk & Western, Baltimore & Ohio Southwestern, and the Frisco. After hearing one witness, Thomas W. Lukens, of St. Louis, A. B. Pugh, representing the Interstate Commerce

Commission, announced that the complainants would be given until August 30 to file briefs, and the railroads until September 10. Oral argument will be heard later.

Mr. Lukens' testimony was to the effect that the difference of two cents in favor of St. Louis at present is only sufficient to give manufacturers there a fighting chance for business in the South, the higher cost of production, including higher rents, increased prices for labor, etc., making it necessary that the market be given a favorable rate in order to enable it to compete with those elsewhere.

REDUCING EXPRESS BILLS.

The executive committee of the Building Brick Association of America which is composed of Frank W. Butterworth, William Hanley, J. Parker, B. Fiske, R. L. Queisser and Ralph Simpkins has just forwarded to the trade the following official letter which is of vast importance to every building brick manufacturer in the country:

"Gentlemen:—If a perfectly reputable and reliable man had walked into your office a year ago and said:

"'Without the slightest effort or risk on your part I will save one-half of your express bills from this time on, provided you will give me half the savings for the first year,' you would probably have said: 'All right! go ahead.'"

"The Ohio Face Brick Manufacturers' Association quietly and earnestly took up this question about a year ago and have accomplished for you exactly the above result, as fully set forth in the accompanying circular.

"This was a great undertaking and has brought forth glorious results, but it has involved the Ohio Association in an expenditure of some \$1,500, which is far beyond their present resources.



Splendid Corliss Engine In Use at the Plant of the Midland Terra Cotta Co.

"At a meeting of this committee held in Cleveland, May 16th, the propriety of asking the brickmakers of the country for a contribution to help defray this expense, which has been incurred for the benefit of all, was discussed, and in accordance with a unanimous vote there taken, we now desire to bring this matter to your attention.

"The results obtained by this little body of determined men will greatly benefit every brickmaker in the United States who has occasion to send any sample brick by express, and we believe that an appeal to your generosity, not to mention your duty, will bring forth a liberal contribution, as we feel sure that none will care to accept the benefits without 'chipping in' on the cost."

Sweeping Reduction in Express Rates

VICTORY FOR THE OHIO FACE BRICK MANUFACTURERS' ASSOCIATION

For the Benefit of Every Brickmaker in the United States

WE are in receipt of a letter from President J. M. Adams of the above Association advising us that their bill of complaint to the Interstate Commerce Commission seeking to compel the Express Companies to re-establish reasonable rates on sample brick has received favorable action and that the Commission has reported and ruled substantially as follows:

That the complainant's members make extensive use of the Express Companies for the transportation of sample brick over a wide range of territory; that the rates were increased in 1903 from merchandise pound rates to merchandise graduated rates, and that a shipment weighing twelve pounds from Columbus, Ohio, to Chicago, cost 35 cents on May 24, 1902, and on November 10, 1910, a shipment of the same weight between the same points cost 60 cents, an increase of over 71%; that the brickmakers are almost wholly dependent upon the Express Companies for the transportation of their samples; they cannot be sent by mail because one brick exceeds the weight limit, nor can they be sent by freight because in most instances time is an important factor; that the Express Companies have no serious competition for this business, and that they derive a very considerable revenue therefrom.

The Commission rules as follows:

"FOR THE TRANSPORTATION OF SAMPLE BRICK THE EXPRESS COMPANIES ASSESS MERCHANDISE GRADUATED CHARGES. DUE TO THE PECULIARLY FAVORABLE CHARACTERISTICS OF THIS TRAFFIC FROM A TRANSPORTATION STANDPOINT, THE CHARGES NOW ASSESSED ARE FOUND TO BE UNJUST AND UNREASONABLE IN SO FAR AS THEY EXCEED MERCHANDISE POUND RATES WITH A MINIMUM CHARGE OF THIRTY-FIVE CENTS."

The Commission further rules substantially as follows:

That the defendants are required to establish on or before the 1st day of June, 1911, and to maintain for a period of two years thereafter, rates which shall not exceed merchandise pound rates with a minimum charge not in excess of 35 cents.

THIS MEANS A SAVING, TO EVERY BRICKMAKER IN THE UNITED STATES, OF ABOUT 50% IN HIS EXPRESS BILLS

A TOTAL ANNUAL SAVING OF \$50,000

All secured through efforts of the Ohio Manufacturers working together for mutual good.

A member of the B. B. A. recently made *one shipment* of Samples on which the saving under the new rates would have been over \$80.00. This ought to open the eyes of every brickmaker to the value of

CONCERTED EFFORT

That is what the Building Brick Association of America stands for — to promote the use of Building Brick and the General Welfare of the Brick business — and we are making good!

How much longer can you afford to "PLUG ALONG ALONE" with everyone against you? Why not join the B. B. A., and get the benefit of its help, the help of the largest and most progressive men in the brick business, banded together to promote their general interests?

NOW IS THE TIME

THE BUILDING BRICK ASSOCIATION OF AMERICA

1301 FLATIRON BUILDING

NEW YORK CITY

If you are eligible for membership you ought also to

JOIN THE OHIO ASSOCIATION

ADVERTISING PRODUCES RESULTS.

Advertising building brick to the consumer—the home builder—is being made a feature by the Beaver Clay Manufacturing Co., of New Gallilee, Pa., and is producing excellent results, which may be tried with success by other building brick manufacturers. Daily and weekly newspapers are being used, and one of the first of a series of letters, “boosting” building brick, put out by this company follows:

“When a man walks into a shop to buy a suit of clothes he will examine several pieces of cloth with minute care, hold them up to the light, and rub them to test the material and the texture. He directs the tailor’s attention to a certain piece, and says: ‘I like the looks of that, but will it wear?’

“It is an astonishing fact that many thousands of men, every year give less attention to the materials they select for their houses than to the material they select for their clothes. To the man of moderate means none of his possessions is the hundredth part as valuable as his house. He builds it usually with the intention of living in it the rest of his life. Yet he decides upon building material in an offhand manner that would be more fitting to the choice of his after dinner cigar.

“If you are about to build, and you hear extolled the virtues of some particular kind of house, the question you should ask is the one that you put to the tailor—“Will it wear?” And having asked, you should not be satisfied until you get at the truth. When you have exhausted all the sources of reliable information you will have found that, above all building materials, brick stands supreme.

“The building of a home, and the paying for it, are serious affairs. There is something else that is even more important—keeping it up after you have it. The construction is over in a comparatively short time; the payment of the contractor’s bill, though a very painful ordeal, does not take long, for you have figured it all out beforehand. But maintenance is the concern of a lifetime. If one has built well, the smallness of the cost of maintenance will be a perpetual comfort. If one has built badly, the increasing cost of maintenance will always be a thorn in the flesh—and a thorn that pierces deeper every year.

“Aside from considerations of beauty and safety—and these are considerations powerful in its favor—brick is the ideal material because it reduces the cost of maintenance to a minimum. There is no other house that so nearly keeps itself as a brick house.

“Insurance rates are not as high on brick houses as they are on frame. Insurance has to be paid every year, and a saving here is a permanent saving. If ever the time comes when it is necessary to sell, a low insurance rate is an argument which never fails to appeal.

“Brick is no more subject to decay than is the earth under foot. It is earth in actual fact, molded into shape by the hand of man, and it has the same immunity from the effects of time and weather. On the contrary, wood decays rapidly.

“The frame house requires frequent painting. If the painting is omitted, the house is unsightly; if it is done as thoroughly and as frequently as it should be, it means the expenditure of much money. Brick does not need to be painted. Wind and rain and the gentle touch of the years give it a tone that no artificial coloring matter can equal.

“A brick house is heated far more easily and cheaply than a house of wood. Not only does the material act as a non-conductor of heat, but the walls are much thicker than those of a frame building. There are none

of the crevices which, though unseen, exist in nearly every frame house of the modern type. The coal bills, for a winter, are at least 35 per cent higher in a frame house than in a brick one.

“The doctor’s bills, made necessary by cold and drafty rooms, are not possible to calculate, but if the government statisticians set to work on this they would produce some illuminating figures. Many a case of grippe or pneumonia would have been avoided if the father of

DID YOU EVER THINK OF IT?

The South's Largest Manufacturers of Highest Class
Face, Fire and Building Brick

Brick houses make comfort for the user. No bother about frozen water pipes, where you scratch in the mud and shiver while the winds blows out the candle, looking for a place to cut the water off. The man in the brick house sleeps and lets the wind howl and the thermometer drop. He knows he is freeze-proof

<p>Brick Houses Reduce Fuel Bills in Winter</p>	<p>PRESS COMMON</p>  <p>Brick is the Ideal Building Material</p>	<p>Brick is the Ideal Building Material</p>
<p>And Ice Bills in Summer</p>	<p>Give us an opportunity to Prove it</p>	

The cost of Veneering frame houses is small, and this produces practically a brick house, which also reduces the fire hazard
We should be glad to talk this over with those who don't like to pay painters, and repair bills

Macon, Ga.
STANDARD BRICK CO.
Macon, Ga.

W. E. DUNWODY, President

Example of Practical and Effective Advertising by the Standard Brick Co., Macon, Ga.

the family had chosen his building material with more care.

“The non-conductive qualities of brick are as valuable in summer as in winter. If brick keeps the heat in it also keeps it out. There is no house so cool as one of brick.

“Noiselessness is an advantage to which the prospective builder is apt to give little thought. It is a real advantage, nevertheless, and happy is he who dwells within walls that deaden sound. Brick is the best stifler of noise. It goes far toward providing the quiet and repose which are the attributes of every complete, well ordered home.

“The general repair bills, for the owner of a frame house, make up an important item in the year’s expenses. To the dweller in brick they are relatively insignificant. The carpenter may do his work well, as carpentry work goes, but he has to come back often. The mason finishes his job, walks away with his tools, and never has to come back.

“Economics lay down the principle that prices, in the long run, follow values. Of the value of a thing there is no criterion so trustworthy as the price it will bring. And here is the ultimate test of the frame. A frame house deteriorates steadily as a ‘selling proposition.’ A brick house does not deteriorate. As an investment a frame house is like a share of uncertain mining stock. A brick house is like a United States government bond.”

A MODEL OKLAHOMA PLANT

Up-to-Date Works in the Southwest, Equipped With all Modern Accessories for Producing Perfect Products

That the Cleveland plant, located at Cleveland, Okla., the property of the Cleveland Vitriified Brick Co., of Oklahoma City, Okla., is one of the most up-to-date as well as one of the best plants in Oklahoma, is the opinion of all brick men who have had the pleasure of visiting this institution and watching its operations.

The plant has had a most successful history, since its advent into the brick industry and the management has spared no pains in making its name a watchword in the clay world.

This fine plant has been built and equipped during the past year and is modern in every way. All the main buildings are of brick and steel construction, ranging

The officers of the company are C. A. Hoshier, president; E. B. Wentworth, treasurer; both of Oklahoma City; D. R. Housher, secretary, and I. E. Hunter, vice-president, both of Cleveland, Okla. The general offices of the company are in the Insurance Bldg., suite 310, Oklahoma City, Okla.

VISIT MODEL PLANT.

Prof. A. V. Bleininger, head of the ceramic department of the Illinois State University, recently conducted a party of his ceramic students to Ottawa, Ill., where they visited the plant of the Chicago Retort & Fire Brick Co., which is considered a model and is equipped with the latest and



Splendid Plant of the Cleveland (Okla.) Vit. Brick Co. The Main Buildings are of Brick and Steel Construction. Neat Cottages for the Workmen are Near.

from one to four stories in height, erected with the main idea of permanency and model interior arrangement. The large flat structure is an improved type of brick dryer and has given the utmost satisfaction.

The shale is taken from the pit by a giant Thew steam shovel and hauled to the grinding room, in steel dump cars, by an electric locomotive which derives its current from the company's power plant. The machinery is of the heaviest type of automatic machinery that could be secured.

The burning is done in fourteen huge kilns whose capacity is three and a half million. Seven of these kilns are of the round down-draft type for the pavers and the others are the up-draft used for the building brick.

This company has sixteen cottages for its employes who wish to be near their work, and they have a model city of their own. In addition to these houses there are several larger ones for the superintendent and foremen.

This company furnished most all of the brick for the big packing houses at Oklahoma City, the Morris, and Schwartzschild-Sulsberger companies and for the big terminal building of the Oklahoma traction company at Oklahoma City.

best types of clay working machinery. The class, which has been making tests and experiments with fire clay, gained much practical knowledge from the visit as Mr. Chas. S. Reed, president of the company, took especial pains to explain the processes of manufacture.

CONFERENCE HELD.

Representatives of various brick, and tile manufacturers of Iowa and Minnesota met recently at the First National Bank Building, at Mason City, Iowa, with a body of railway men to discuss ways and means of reducing damage done to clay goods while being shipped. Various ways of packing and loading goods and other matters of mutual interest were discussed. Representatives from the Milwaukee, Great Western, Iowa Central, the M. & St. L. and other roads in the territory were present at the meeting.

BUSY PLANT.

The Black Hills Pressed Brick Co., located at Rapid City, S. D., is doing a good business and is making 40,000 sand lime brick per day.



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EDITORIAL COMMENT.

Clay manufacturers are just now experiencing the usual mid-summer lull and depression following the spring rush.

The experienced sailor dreads a calm, but from experience he knows it cannot last indefinitely; and is always peering ahead for a wind cloud or a ripple in the water. The experienced and weathered clay man knows that a rush of business is sure to follow a depression. As a war general, "in times of peace prepares for war," he uses these temporary quiet periods to build up the weak places in his business.

He keeps everlastingly at it, strengthening his working forces, overhauling machinery and making plans to further increase the capacity. If he finds his cost system is unsatisfactory, other systems are looked into and a new one installed.

While others are resting under the delusion that there is no business, this wide-awake man gets a goodly share of the small orders which are always to be had and often secures them from the mere fact that his plant is known to be running, while it is generally understood that his neighbor's plant is "shut down."

If there ever was a time when clay men should be active and keep brick ever before the public eye—as a superior building material—it is now, when trade is dull. Much more effort is needed, than when affairs are active and orders are coming in rapidly.

Of course, if you have given up and are willing to "go into your hole" like a bear to take a snooze, then you are taking the right course in closing your plant and discharging your men. But you will have a mighty task when you awaken, in trying to open your plant, reorganize your working force and worst of all, will probably

find your much alive competitor has captured your best customers.

We believe that brick is just beginning to "come into its own" and with the united effort of all interested, this great industry will experience a revival, such as it has never before undergone. Every printed word in favor of brick, every reproduction of an attractive brick building in the newspapers, tends to cause favorable inquiries for brick, from those contemplating the erection of homes or business houses. If all through the country, such matter is brought to the attention of the general public, a surprisingly large number of inquiries would be the result. Moral. Get busy with printer's ink.

While trade conditions are quiet, better weather throughout the western district has largely relieved the apprehension as to the staple crops. The farmers in the east half of the Mississippi basin are having a big inning and were it not for the scattered reports of shortages in the far western portion, the crop reports would be glowing. With these prospects in view, there will no doubt be a revival of building in the fall when the farmers have marketed their crops. This will mean a call for clay goods of many varieties, as substantial brick buildings are now much in favor with well-to-do farmers.

Good crops mean more automobiles for farmers. More autos mean more good roads. Good roads mean that eventually brick country roads will be a common instead of an uncommon sight, for no other paving so well withstands the wear and tear of auto traffic. Talk brick roads. It will set people thinking. Thinking results in action.

We have never had a clay show in this country and as we are going to make our first effort in this direction, in March, 1912, it behooves every manufacturer of clay goods in this country to take an interest in helping to plan for this show. If you feel you are not able to prepare an exhibit entirely your own, why not combine with all the clay men in your immediate vicinity and make one good exhibit for the entire group? This would be much more effective than a few scattering samples of ware, which would fail to attract attention among many large exhibits. It is none too early to begin to make definite plans as to exhibit space and selection of ware for this purpose.

OUR WORD IS GOOD, but WE DO NOT ASK YOU TO TAKE IT—

from us, that "Brick and Clay Record" want ads are unusually Successful in bringing desired Results.

We have on file many letters from pleased Customers, among them being the following from a prominent Manufacturer, of Dayton, Ohio, which states:

"I am glad to say that I received many Inquiries from my Ad, in your Classified Department, which cost me only \$1.00, and I am well pleased with the Results."

We do not ask you to believe even his Word, but as Seeing is Believing, we want you to try it for Yourself. If Others have been Successful, why not You? An Ad will cost you but \$2.00 per inch for space used. You can say a Lot in a small Space. Try It.



BRITTLENESS IN BRICK.

The following by a prominent engineer answers an oft-repeated query from brick makers and contains some useful and valuable information on clays in general.

True brittleness is a fault inherent in the clay, and it may be either physical or chemical.

Alluvial clays as a rule are fine grained and the grains are rounded—water worn—and the bond in such material is naturally weak. The bond in a brick is due to the fusion or partial fusion of a portion of the material which surrounds and cements together the coarser particles. If the coarse material is fragmental, other things being equal, the bond will be stronger than with rounded material.

Thus the physical character affects the burned product. We may illustrate by citing various rock formations. Flints, cherts, obsidian, etc., are very hard but brittle because of the uniformity of the body, and such materials are easily chipped into arrow heads by pressure with a piece of bone.

Basalts may be brittle because the quick cooling has not given time for the development of crystals of any size to lace the mass together. Older plutonic rocks with their angular masses of quartz, lath shaped feldspar, plates of mica, etc., are tough because of the interlacing of the various crystals.

A weak alluvial clay brick shows on the fracture a fine grained mealy structure while a shale brick is conglomeratic.

There is also a chemical side which has influence for we know that some glass mixtures give stronger glass than other mixtures, and also that the addition of certain fluxes to paving brick material increases the toughness of the burned product. The chemical influence will increase with the degree of fusion and rock solution and becomes all important in a completely fused mass, but in a common brick in which the rock solution is but slightly advanced, we believe the physical structure to be the principal factor, although we must not entirely ignore the difference between a weak and a strong cement as a bonding material.

We cannot control the chemical factor, at least not in common brick product, but we can greatly improve the physical character by the addition of sharp porous grog, such as crushed bats, furnace clinkers, etc., provided the clay is not already overloaded with sand so that it will not stand the addition of any more dead material. The addition of fine sand, or silt, or even coarse sand when water worn, does not give the results that we get from sharp coarse porous material.

Not only will such material increase the toughness of the brick but it helps to overcome laminations, and improves the drying possibilities. We have seen strong, sound, clear ringing brick made from clays which alone would give a weak, badly shattered brick.

We find that the loss from kilns is due frequently to cracks in the brick rather than brittleness or weakness of the bond.

The brick crack during the drying and if examined when partially dry, the cracks are plainly evident, but

when fully dry, the cracks close up and are not visible. Such cracked brick, unless they break before being put into the kiln, result in considerable kiln loss. The cracks do not heal during the burning but instead become deeper through the shrinkage strains of burning and the cooling strains, and the lightest touch in removing them from the kiln will cause them to break.

The alluvial clays, especially the Glacial drift clays, and the coastal plains clays of the Gulf States and southern Atlantic border, are as a rule very weak and troublesome to dry, and it is in this class of clays that we have excessive dryer and kiln loss. Cracks in brick may be designated as check cracks, shrinkage cracks, auger, die, and "no flow" lamination cracks, each distinctive and easily recognized. The shrinkage cracks are straight lines across the face of the brick, which extend vertically in depth except where diverted by other systems of cracking, and very often the brick are broken partly in two before entering the kiln.

The addition of the proper grog greatly aids in overcoming these difficulties.

Brittleness may be lessened in many wares by proper cooling, giving the fused material, whether much or little, time to anneal. The annealing stage should be from low red heat to blackness rather than when the kiln is first closed. Many are very careful at first, but rush the cooling just at the time when the annealing really begins.

SILO CONSTRUCTION.

Silos are coming into general use, on farms throughout the country, and it seems to be a race between the concrete and brick manufacturers as to who shall have the most of the business. A number of brick manufacturers of the country are making a specialty of producing brick for this purpose and the more up-to-date ones are not neglecting the very important matter of advertising in the home papers, explaining the superior merits of brick for silo construction.

However, advertising of this, as well as other lines, has been much neglected by most brick men, as is evidenced by the following letter from the Mason City (Ia.) Brick & Tile Co., written to the Building Brick Association of America:

"The value of the work which your Association is doing can hardly be estimated and properly appreciated by the brick manufacturers, and I think you have accomplished a great deal with the limited sums you have had at your disposal especially as compared to the unlimited funds which the Cement Producers' Association have had for their campaign.

"At the present time we are making a special block for silo construction which will be extensively used by farmers. Only a day or two ago a farmer was in our office, and we were talking this silo block to him, when he said: 'I never heard of it before; in fact we see nothing about brick and clay blocks, but our agricultural papers are full of advertisements regarding the wooden or stave silo, and cement silos, as well as the use of cement for all other purposes.' This plainly shows that advertising does the business and is absolutely necessary."

GRAVITY CURVE TRANSFER.

The Marinette Iron Works, of Marinette, Wis., has been granted a patent for a device whereby a "Gravity Curve" is used for transferring brick from one set of wire tables to another set, running at right angles. This device is used quite extensively on many sand mold yards for carrying brick to racks.

The Marinette Company has recently installed one of these devices at Rudyard, Mich., at the plant of the Thornton Bros. and one for B. O. Hart at Wrenshall, Minn. In the latter case the device resulted in the saving of the labor of five men in trucking alone. The Biesanz Bros. at Winona, Minn., are having one of these devices installed at their plant.

Mr. Chas. J. Anderson, the inventor, first conceived the idea four years ago, but after the machine was in operation the device was copied by another party and only after the case had been appealed six times did Mr. Anderson receive the exclusive right to the patent. Mr. Anderson has also invented and patented a dump table which has been used with much success at various plants.

CLEANING CUTTING WIRES.

A subscriber asks: "Can you recommend me a good means of automatically cleaning the wires on a cutting table? I find that some clay always adheres to them and spoils the appearance of the brick."

It is usual for the man at the cutting table to draw his finger and thumb up each wire in turn as soon as possible after a set of brick have been cut, and this method of cleaning is the best. No automatic cleaner which has yet been placed on the market can be considered entirely satisfactory.

One of the best consists of a piece of felt or moleskin with a V-shaped piece cut out of it opposite to each wire. This cloth is then mounted on a piece of board or stout sheet metal having similar V-shaped openings, but rather larger, so that the cloth overhangs its support. The whole arrangement is so mounted on a hinged lever that it can be made to sweep towards and down the wires, sufficient pressure being applied to clean them without breaking. A similar arrangement mounted on a small handle can be used like a large fork, but is seldom so good as the simple use of finger and thumb.

If the clay adheres very persistently to the wires it may be that it is in too soft a state, and by using a somewhat stiffer paste the difficulty may probably be overcome. In this case it will, of course, be necessary to ensure that the machinery is capable of working with a stiffer paste without a serious increase in the power used.

BLOWING OUT BOILERS.

An experienced engineer states that it is best to allow the boiler and setting to cool off entirely and allow the water to run out. In this way all of the loose sediment settles in the form of mud and may be washed out by a stream of water from a hose; while if the boiler is blown out while the brickwork is hot the mud is dried, and sometimes baked into a hard mass, which is difficult to remove.—Power.

ELECTRICITY FOR CLAY HAULING.

The Utica (Ill.) Fire Brick Co. are planning to install an electric road from their clay beds, near Deer Park, to their plant. The company will build the road and will secure the needed electricity from the interurban road. This would greatly facilitate the handling of raw material and effect a considerable saving in the cost of clay transportation.

OVERWORKING THE PUGMILL.

Almost all clay manufacturers will agree that the irregularities seen in the cut surface of many wire-cut brick are nearly always due to carelessness in the preparation of the clay. Unless constantly watched, the temperers will persist in allowing improperly prepared clay to go to the machine. Because a machine is provided with a pair of strong rolls and a spindle full of knives, that is no reason why it should do the work of the grinding-pan. Very often when the cogs snap—as they will snap when worked close to breaking point—it is not the fault of the machine so much as of the men behind it. Brickmakers, who are constantly being annoyed by the breaking of the cogs, etc., should see to it that their machines are not being ruinously overworked by some lazy member of the brick gang. If a machine is to work economically, it must run easily and smoothly.

CUTTING GLAZED TILE.

A writer in "Popular Mechanics" has the following suggestions to offer in reference to cutting tile:

The owner of a house, who wishes to keep his residence in good repair, often finds that he must reset loose tile and replace cracked ones. This is quite a difficult job for an inexperienced person, for the tile must be reduced in size. This can be accomplished by filing or grinding them on an emery wheel, but a better method is to use an ordinary glass cutter on the glazed side where the tile is to be cut and then break off the part to be removed with parallel-jaw pliers. To cut the tile in half, use the glass cutter as mentioned above and tap gently on the under side with the sharp edge of the hammer face.

BRICK AS A FIRE RESISTANT.

The Engineers' Society of Western Pennsylvania have been conducting a series of experiments on different classes of brick. It was found that with mixtures of magnetite and marble with kaolin the refractoriness of the magnetite brick decreases as the amount of clay increases, and the same applies to the addition of lime. With mixtures of alumina and silica, additions of kaolin bring down the melting point of pure alumina considerably below the normal value of about 2,000 deg. C., and if quartz be added with 9.1 per cent alumina the melting point is reduced to about 1,566 deg. C., after which a very small amount of alumina raises the melting point rapidly to 1,790 C.—the melting point of pure silica. In the case of a silica brick with a certain amount of clay introduced as a binder, it was found that as the amount of clay is increased the refractoriness rapidly falls off after the added amount reaches 6 per cent. This points to the desirability of making brick either very high in silica or entirely of clay. Other investigations indicated the effect of potash, soda, lime, magnesia and iron on the melting-point of clay. Slight additions of the fluxes named reduced the melting point, the reduction being proportionate to the quantities added.

OIL-BURNING APPLIANCES INSTALLED.

After making a thorough test and finding that the oil-burning appliances of Tate, Jones & Co., Inc., enabled them to make a saving in fuel cost, and in addition very greatly improved the quality of their output, the Pfaltzgraff Pottery Co. at York, Pa., have just awarded a contract for a complete fuel oil-burning equipment for their pottery plant to Tate, Jones & Co., Inc. Mr. G. E. Luce, ceramic engineer of the Tate, Jones & Co., conducted this test and secured the contract.



CRACKING IN CEMENT GROUTED PAVEMENT

In a paper presented at the annual meeting of the Michigan Engineering Society, Earle R. Whitmore, city engineer of Port Huron, Mich., discusses at length the causes of the cracking of cement grouted brick pavements and suggests remedies.

The causes observed by Mr. Whitmore are five in number, and are as follows: Frost, expansion, settling of the sand cushion, settling of the subgrade, and contraction between transverse expansion joints. These are arranged in what he regards as the order of their importance and frequency of occurrence.

Frost.

According to Mr. Whitmore's observations, frost is generally, if not always, the cause of the longitudinal cracks appearing at or near the crown of the pavement. In support of this theory, he gives arguments essentially as follows:

Such cracks invariably make their first appearance when the snow goes off in the spring, and are then small.

Where the subgrade is clay, cracks occur in pavements provided with ample expansion joints along the curb, as well as in those without expansion joints.

Where the subgrade is sand, and on well drained fills, cracks are not found, even where no expansion joints are provided.

The cracks follow the line of travel where the snow is packed and the frost penetrates deepest. Where there are car tracks in a street and the subgrade is a material that retains water, there is usually a crack along the driveway on each side of the tracks. Where other streets cross the paved street, the cracks do not continue across the intersection, presumably because the travel across the street and around the corners packs the snow, so allowing the frost to penetrate over such a large area that the pavement is raised evenly and is not broken. Where, however, a street joins the paved street but does not cross it, the cracks run off toward the curb as they approach the side street, continue across it and come back to the center beyond the side street.

If a careful examination be made of the concrete foundation under one of these longitudinal cracks, it will be found that the concrete is also cracked.

Mr. Whitmore then points out the failure of many otherwise excellent specifications to make proper provisions for drainage and so minimize the danger from frost.

To prevent cracking because of the action of frost, Mr. Whitmore recommends that when the subgrade is clay suitable drains be placed about 3 ft. below the tops of the curbs and the trenches filled with coarse material such as cinders or small field stone. These drains should then be connected with sewer inlets. He does not favor the use of cross drains. Mr. Whitmore states that he does not consider his observations sufficiently final to warrant the omission of expansion joints next to the curb since

they are so generally specified, but states that it is his personal opinion that they are seldom of use except in very wide pavements. Once a crack is started, he says, it doubtless widens because of expansion and contraction, but he states that he has never seen a crack of this kind that appeared to have been caused originally by expansion.

Expansion.

Damage to pavements by expansion, according to Mr. Whitmore, is comparatively slight and easily repaired, though sometimes spectacular when caused by the buckling of the pavement. Where there is no abrupt change of grade that allows the pavement to buckle, his observations indicate, he states, that the filler between the courses is sometimes crushed in places and the cracks make diamond shaped or triangular divisions on the surface, seldom breaking a brick but following the joints. If there is a bend or an angle in the street the effect of the expansion will be carried to that point and the angle will be crowded considerably out of line.

These zigzag cracks are inconspicuous as a rule, but according to Mr. Whitmore, tend to shorten the life of the pavement by allowing water to penetrate, and by forming starting points for the cracks caused by the jarring of heavy traffic. As a remedy, he recommends the providing of frequent transverse expansion joints formed by laying several courses about $\frac{1}{4}$ inch apart and filling the joints with a bituminous filler before grouting the rest of the pavement. Mr. Whitmore holds that a single expansion joint $\frac{1}{2}$ inch or more in width is inadvisable because the passage of loaded vehicles causes a jar that soon loosens the adjacent brick; because in warm weather the bituminous filler in a wide joint is apt to run from the crown toward curbs; and because the expansion sometimes forces together the bottoms of the blocks next the joints while the tops are still held apart by earth and other material forced into the joint, with the result that the brick heave up next the joints.

Settling of the Sand Cushion.

Cracks due to the settling of the sand cushion, according to Mr. Whitmore, result from several causes. Those enumerated by him are substantially as follows:

When spread on a macadam foundation the sand is apt to work down into the interstices in places, so causing unequal settlement and the cracking of the pavement. This could probably be avoided, he says, by filling and rolling the foundation in about the same manner as if it were to be a finished macadam roadway, but such procedure would not usually be economical. He holds that except under unusual conditions, a good concrete foundation is the most economical in the long run.

If, in laying the concrete foundation, sufficient care is not exercised to make the surface parallel with the required pavement surface, the sand cushion will be of vary-

ing thickness and will be likely, therefore, to settle unevenly.

If the foundation be laid properly, but the cushion carelessly luted, or laid with a templet and the templet not carried back and drawn over the surface several times, the surface will invariably be wavy and the cushion of unequal thicknesses. According to Mr. Whitmore, it is a serious mistake to leave the cushion uneven and depend upon the rolling to level it, for, though the roller will probably make it appear even, some of the blocks will be well bedded while others will receive practically no benefit from the rolling and will settle later under the traffic.

If the sand be partly dry and partly moist when spread, the cushion will settle unevenly. A pile of sand is often moist on the outside and dry inside, or vice versa, and, according to Mr. Whitmore, when such sand is used it should either be dried or, perhaps, moistened uniformly.

Cracks caused by the settling of the sand cushion, according to Mr. Whitmore, usually divide the surface into approximately rectangular areas varying in size from two or three brick to several square yards. The cracks do not extend across the brick. The rectangles go down under traffic heavy enough to break the grout, or, if the traffic is not heavy enough to break the bond, an arch is formed, which gives rise to the rumbling noise so often noticed.

The proper thickness of the sand cushion, Mr. Whitmore states, has been the subject of much discussion. He believes that if it be properly laid, any thickness from one inch to two inches is suitable. He also holds that a sand cushion properly and carefully constructed is as good as a mortar bed, and perhaps better.

Settling of the Subgrade.

The settling of the subgrade, like that of the sand cushion, Mr. Whitmore attributes to several causes. Pavements laid across fills are apt to settle, and very wet and undrained subgrades are likely to produce the same result. Only great care, he states, will prevent the first, and suitable side drains will usually remedy the second trouble. Another cause cited is the improper filling of trenches opened for various purposes. Too great care, he says, cannot be exercised in backfilling such trenches.

Contraction Between Transverse Expansion Joints.

The contraction between transverse expansion joints, according to Mr. Whitmore, results in the formation of fine cracks that are hardly noticeable unless outlined by moisture. When the expansion joints are placed at considerable distances apart, these cracks appear at intervals, he states, and follow the grouted joints from curb to curb. Where the expansion joints are 50 ft. apart two of these cracks appear in each 50-ft. section, dividing it into lengths of about one rod. He believes that cracking from this cause can be avoided by placing transverse expansion joints at intervals of about 15 ft., in which case it would be necessary to fill only one or two joints at each place with bituminous filler.—Good Roads.

WOMEN WIN PAVING VICTORY.

The public spirited women of Tarrytown, N. Y., turned out on election day and carried the vote for paving Broadway, the main street of that town, which will be paved with brick, at a cost of \$14,000. William Rockefeller promised to pay \$10,000 toward the fund, provided the village voted in favor of the paving. He is also to give an additional \$15,000 to erect a bridge there, to be called the Washington Irving Bridge.

SHORTAGE OF PAVERS.

Paving conditions in Ohio are indicated by the following report from Columbus:

Because of the unusual demand for paving brick in this vicinity, the stocks are so low at the plants that a shortage prevails, so it is claimed by contractors. In the eastern and southern parts of the state there is no such a dearth of pavers, although there has been trouble in securing enough pavers to go around the district.

It was pointed out in "Brick and Clay Record" several months ago that the volume of municipal improvement work this season would be about as heavy as ever experienced, and this statement is now being backed up by facts—the shortage. As a result of this shortage, there will be more or less delay in the completion of contemplated improvements. In some instances ordinances have been passed by councils in the different towns for street improvements, but as there is no supply of pavers for this work, the contracts cannot be awarded as early as desired. In Columbus proper, over 2,000,000 pavers are required, and the available supply is said to be less than one-quarter that volume.

A RUSHING BUSINESS.

The following, from the Portsmouth (Ohio) Times, states that "the Carlyle Paving Brick Co., of Sciotoville, has been doing a rushing business during the first three days of July. During that time they shipped from their plant twenty-two hundred tons of brick, numbering 465,300 brick, which filled fifty-nine freight cars. The brick were shipped to Chicago, Cincinnati, Columbus, Dayton, Huntington, Middletown, Ironton and Portsmouth."

MUCH PAVING IN TEXAS.

Prospects in Texas are said to be good for the paving industry. Many of the cities are planning important improvements in street paving. At Temple, Texas, ten blocks will be paved and at other points throughout the state, brick is to be used in many municipal operations.

MANY PAVERS USED.

A local paper states that over 1,000,000 brick are to be used for the paving of South Water St., Sheboygan, Wis. The brick were made by the Metropolitan Co., of Canton, O. The freight charges on the brick constitute about half the cost of the brick to the contractor. The price for the brick at Canton is \$10 per thousand while the freight charges aggregate about \$10 per thousand. Thus the freight charges alone on the \$50,000 job will aggregate about \$10,000.

PAVING IN OKLAHOMA.

Altus, Oklahoma, is contemplating the paving of several miles of its streets and the town has a committee in the field looking over various kinds of pavements. It is understood that they favor brick for the business streets, but as yet have not decided.

Another town which is to pave its streets is Lawton Oklahoma, where a contract will soon be let for 45 blocks of paving. The estimated cost is \$156,000.

PROUD OF PAVED STREETS.

With its 357.59 miles of paved streets and boulevards, Kansas City is said to lead the cities of the country in its paving mileage, and practically every foot of it has been laid, and much of it relaid several times, since 1880. There was practically no street paving in Kansas City prior to 1880.



FARM DRAINAGE.

Tile drainage has become more and more a necessity as farmers are becoming enlightened as to the vast benefits to be derived by the thorough drainage of farm lands. The following is from *Successful Farming* and indicates the general interest taken by farmers in the subject:

That there is good profit in farm drainage is so nearly always accepted as a fact that we will now write concerning increased profits through greater efficiency and economy of drain construction. The prime object of drainage is, of course, to remove surplus water from the soil before it has time to injure the crops. Some places it is a case of removing the water, as where pumps are used to lift the water over dikes or levees, but ordinarily it will run off of itself when a way is provided for it.

As most of the drains with which we are concerned are of tile, what we discuss here will apply most to them. To begin with, most any business suffers more from lack of plans than from anything else, and drainage systems are no exception. Tiling is a rather expensive improvement, from the standpoint of first cost, and errors are often hard to locate and expensive to undo. Since the thing to do is to plan before starting actual work or buying material, one must first decide who will do the planning. Shall it be a case of "each man to his trade," or of having to "do things yourself when you want them done right?" That must depend largely on circumstances. Sometimes there is no drainage expert available. If so, one must do the next best thing, find out what he can and do some hard thinking and planning. There is good printed information available, some of it a little mixed with poor advice, but that is unavoidable and is not disqualifying. A larger per cent of the talk is poorer advice than much of the writings, yet talking things over is well worth while. Furthermore, it is imperative that we learn most things from each other, as we lack originality and longevity too much for anything else. Cut and dried rules cannot be followed, as conditions are variable, but fundamental principles should be learned and kept in mind.

Having made good plans it is comparatively easy to carry them out, but the question of whether to get professional services or not is still here. Circumstances must again be taken into account. The professional can usually do the work better and cheaper than the other fellow, but the methods used are simple enough so that nearly anyone may be acquainted with them and be better able to judge the quality of work they are getting done. This applies to those who live on their farms and to those in a position to give personal supervision to them. While searching for truth do not be "wafted about by every wind or doctrine" and at the same time let the old give place to the new.

One thing in particular, make plans for your entire system to start with. Not that it should all be constructed at once, but to avoid what has often occurred—having to take up tile once laid because it was not large or deep enough to permit of the desired additions to it.

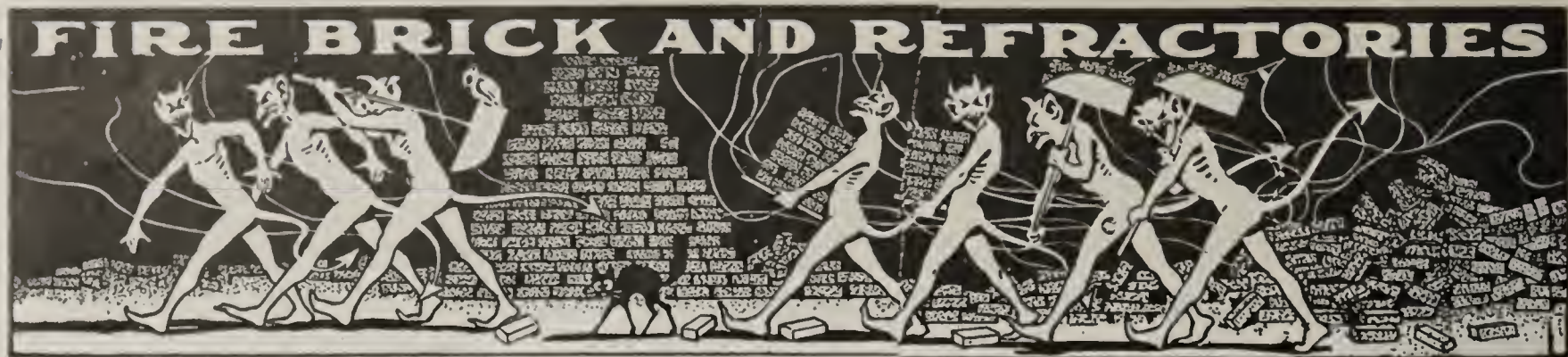
Among general principles, remember that the size of tile should be ample without being wasteful. Bulletin 78 of the Iowa experiment station gives a table of tile ca-

pacities that are about right for the smaller sizes of tile. The capacity of large tile is underrated in the same table. Right here comes the question of limits as to size of tile. It is now quite generally conceded that there is no economy in using three-inch tile, and many are in favor of using nothing smaller than five-inch tile. The writer knows a lot of four-inch tile doing first-class work, yet is willing to admit that there is but little to gain in cost of four-inch as compared with five-inch tile, and wherever sand or other difficulties are liable to be met with recommends the five-inch even for the small amounts of water. It is when large areas are to be drained and it becomes a question of choice between large tile and open ditches that the choice means a great deal to the pocketbook. Much difference of opinion and practice exist, as well as difference in conditions. There are conditions under which it is undoubtedly cheaper to use tile than open ditches, so that it becomes merely a question of whether tiling these lands will pay or not, for open ditches reach their limitations regarding depth and grade much sooner than tile.

It is a surprise to a lot of prosperous up-to-date farmers in some sections of the country to learn that tile drains two and three feet in diameter are being used in other sections. They themselves hesitate long to put in a ten or a twelve-inch tile to get rid of an open ditch through their farms. It has been suggested that ditches permit the washing away of the best of the soil. Now where can a given amount of money be invested to prevent the most washing, in branch tile at points where gulleys are forming, or in large main ditches? Also which kind of ditches interfere most with cultivation?

The location of the tile is an important matter, too. The depth and distance between lines vary largely with the soil, but deep tiling is more and more in favor with experienced men. Seep water is the most difficult to get, and borings may be a great help in finding the source and the course of the water. The way to do it is to cut off the flow above the seepy point. Locate the tile so it will be easier for the water to pass off through it than to seep through the ground. In general, use long parallel lines rather than many short ones connected to a main, as each of them must pass through ground already drained to reach the main, resulting in the loss of that much material and labor.

As for all permanent improvements, good material and workmanship should be insisted on. Whenever accurate work is desired or a definite contract is to be fulfilled, a survey is required, giving the depth to be dug from definite points at regular intervals. The tiler must then use a line or targets set over the ditch and parallel to the bottom of it and measure from it to get the proper depth at all points. While an engineer or a surveyor is not always required, the tiler who is antagonistic to him or who is a booze fighter should seldom be employed, and still more rarely trusted. Much tiling has been given over to that class of men at a great loss to the employers. Guess work is entirely unnecessary. It is practical to know just what fall and depth one is to have when the job is complete.—F. O. Nelson.



A RECORD.

The fire brick industry, one of the most important in the country has been doing a thriving industry as the following will show:

The United States Geological Survey reports the production of fire-brick in 1909 as more than 50 per cent greater than the output for the preceding year and even higher than that of the record year of 1907. The output for 1909 was 55,150,000 pieces of fire bricking, the equivalent of 838,167,000 nine-inch fire brick. The total value of these brick was \$16,620,695, an increase of \$5,924,479 over the value for 1908.

PLANT PURCHASED.

A Pennsylvania newspaper states: "The property of the Renovo (Pa.) Fire Brick & Clay works has been bought by a company, organized under the name of the Renovo Fire Brick and Clay Manufacturing Co., with the following officers; president, H. Deffenderfer, president First National Bank, Auburn, Pa.; vice president, R. T. Power, vice president Bernard Fischer Co., Inc., Philadelphia; secretary, F. H. Voss, cashier Miners Deposit bank, Lykens; treasurer, Bernard Fischer, president Bernard Fischer Co., Inc., Philadelphia.

This company will spend from \$75,000 to \$100,000 in improvements and will commence work at once under the management of J. G. Power, of Chicago. The new plant will have a capacity of from 30,000 to 50,000 brick a day and as they have about 700 acres of what is conceded as some of the finest fire clay in the United States if not in the world, there is little doubt but that they will be successful.

PENNSYLVANIA NOTES.

The Willetts Co., of Pittsburgh, manufacturers of refractory materials and large clay pots for glass manufacturers, are erecting a mammoth plant at Fairmount, W. Va. The building will be the largest plant of its kind in the United States. Harry Willetts will be in charge of the new factory.

James B. Graham has been elected president of the Bickford Fire Brick Co., a Pittsburgh concern, that is well known to brick manufacturers throughout the country.

Fire and furnace brick are to be manufactured by the Piedmont Brick Co., of Piedmont, W. Va., of which Martin J. Tierney, formerly mayor of Piedmont, is general manager.

E. K. Hutchens, of the Olive Hill Fire Brick Co., will establish a new brick plant in Carter County, Ky., so it is said. He resides at Olive Hill, Ky.

After an idleness of nearly a year operations have been resumed at the plant of the Sharon Fire Brick Co.'s plant.

We are told that the Patton (Pa.) Clay Manufacturing Co. shipped 200 or more cars of pipe, brick, etc., last month, which indicates that business is good with this company.

GREENPOINT FIRE BRICK.

The members of the firm of the Greenpoint (N. Y.) Fire Brick Co., have made a study of the manufacture of fire brick materials and workmanship and thoroughly believe that the importance of good material and workmanship in the fire brick used in furnaces or ranges cannot be estimated, as a cheap or carelessly constructed fire brick might mean the danger of fire to the building, or at the best, lack of heat in the range or furnace. This company manufacturers fire brick of every standard shape. A few of the varieties are arch, wedge, split, soap, jamb, splay, boiler settings baker's oven specialties, tiles and slabs. Special shapes for special purposes are also made, and fire mortar or ground fire clay of the best quality are supplied. The firm is in a position to fill orders for delivery by truck, rail or water, or packed for export, from the smallest to the largest quantities.

The officers of the company are: John Cooper, president; Clarence Cooper, vice president and treasurer, and Andrew Cooper, secretary.

The armor grade of fire brick is the specialty put forth by this firm. This brick is especially useful for boiler linings, drop forging works, glass works, lead furnaces, or in fact, in any place where the tests are of the severest type. The company believes that under no conditions will the brick fuse or suffer fracture from the sudden changes of temperature or from collision and say, where Armor brick are used, repairs should not be necessary inside of two years.

FIRE CLAY NOTES.

The Fallston (Pa.) Fire Clay Co. is taking bids on erecting a one-story brick and steel brick manufacturing plant from private plans.

Work will be begun at once on the erection of a three-story tile dry house for the Excelsior Fire Clay Co. at Lisbon, O., to cost \$10,000.

A contract has been awarded the Fulton (Mo.) Fire Brick Co. to supply the Great Northern Railroad with fire brick linings necessary to convert the locomotives of its Montana division from coal to oil burning. This company also has the contract for linings for fire boxes for the Chicago, Milwaukee & St. Paul and the Atchison, Topeka & Santa Fe, and the factory will be permanently engaged in turning out this class of products.

COMPANY IS PROSPECTING.

The Pennsylvania Fire Brick Co., are prospecting on lands owned by James E. Clark and others along Blake Bear run, Lock Haven, Pa., where it is said the company proposes to manufacture fire clay goods.

PLANS WAREHOUSE.

The American Fire Brick Co., has plans for a large one-story warehouse to be erected at Spokane, Wash. The building will be a brick building 63 ft. by 50 ft. in dimensions, and will cost about \$3,500.



MORE ABOUT PIPE PRICES.

The "mysterious stranger," from Philadelphia, again takes up the cudgel in espousing the cause of the sewer pipe manufacturers, in the general effort to raise the prices to a point where there will be a profit to stockholders and all concerned in the manufacture of pipe.

He makes the following observations:

We note in "Brick and Clay Record," under date of July 1st. that the American Sewer Pipe Co. had a good year. According to the president, the company spent \$170,000 to keep the plant in operation, spending, in addition to this sum \$32,000 for permanent improvements, but above all, he does not fail to mention the deplorable condition of the market at this time, which seems to be caused by low prices and the increase in the cost of raw materials.

Here is one of the largest sewer pipe factories on the Ohio River complaining about the low prices at which they are compelled to sell their manufactured ware, with apparently no profit whatever to those directly interested. Is it any wonder that the stockholders of these large factories do not receive any dividends? How much better it would be for everyone connected with this line of manufacture if the stockholders received some moneyed consideration in return for the money they have invested, but, how can any money returns be made at the discount which this material is being sold at to-day?

We also note that the leading companies are realizing that they are against the wall when it comes to advancing the discounts. It is high time that they advance the discounts, adhering strictly to them in the transaction of their business. Let every factory adopt the one price system and live up to it. The same quantity of this material would still be used by the consumers. It is almost a certain thing that as soon as everyone concerned in the buying of this material realizes that the one price system is a permanent thing, and has come to stay, they will be satisfied to pay the prices asked.

The greatest trouble that the manufacturers of sewer pipe have to contend with, is their agents, who when they learn that the manufacturers are about to advance the discounts, send in a number of orders subject to future delivery. Now, what the manufacturers should do is to adopt one discount, let all agents sell the jobbers at this discount, and then let the jobbers sell to the sewer pipe consuming trade at a profit. This would do away with the old system which has held sway for so long, under which the manufacturers' agents sell to the jobbers, contractors and the private consumers, giving each of them a different discount.

If this system, and a fair price, were adopted and lived up to by the sewer pipe manufacturers, we do not see why this business could not be conducted in a business-like manner and a profit realized, so that the stockholders' investments would be paying ones.

SEWER PIPE PRICES.

The following comments, by Anton Vogt, on prevailing conditions and prices in the sewer pipe world are pertinent

at this time, when there is a general discussion going on as to prices for pipe:

In view of the fact that prices on pipe have been very low in the past year, the manufacturers have made very little or no money, as is shown by the "Statement of the American Sewer Pipe Co.," which shows a net profit of \$51,000 on an investment of \$7,000,000, only about 7/10 of one percent on the money invested. I will not try to fathom the causes for such a miserable showing—high salaries and improvements may be factors.

In this advanced age, when sanitary conditions are live issues, it seems that prices on pipe could be raised so as to permit of a reasonable profit for all engaged in its manufacture. People must have pipe and for anything in demand a living price can be obtained.

I have observed, in my travels, that there is an erroneous impression among most of the workmen employed in sewer pipe factories all over the country in regard to sewer pipe prices. I have been told by the workmen that it was not to be wondered at, that sewer pipe manufacturers were buying automobiles and going to the springs in warm weather. I was shown a price list which explains these impressions. The workers believed that pipes were sold at price list prices, for instance, 30 cts. per foot for 6-inch pipe. They did not know that 6-inch pipe are generally sold for 75 per cent off of list price, or for 7½ cts. per foot, and oftentimes for much less.

No doubt almost any sewer pipe manufacturer would be willing to pay higher wages if he could get 30 cts. per foot for 6-inch pipe and prices in proportion for the other sizes.

OUTLOOK BRIGHTENING.

The outlook is brightening for the drain tile industry in the East, as a result of a rumor that has gone out in the trade, to the effect that in the construction of the new subway systems, totalling, with the Fourth Ave. Brooklyn line, now nearing completion, about 43 miles, terra cotta drain tile would have the preference over concrete conduit, because engineers have found they withstand the effect of electrolysis when moist, without deterioration. While, of course, it is not yet known how many feet of this material will be required, about 2,500,000 feet of drainage conduit were used in the 17-mile cut of the present underground railway, therefore the total to be used in the construction of the new systems will aggregate 4,000,000 feet at least.

PIPE WANTED.

The American consul general at Vancouver, British Columbia, reports that the council of New Westminster has authorized the city engineer to call for tenders for pipe for the sewerage system for the west end of the town, for a distance of about 10 miles. The plans, specifications, and form for tenders can be obtained by interested parties from the city engineer, New Westminster, British Columbia, Canada. Address Bureau of Manufactures, Washington, D. C., and refer to File No. 7010.



RESULT OF JOINT CONFERENCE.

At the last convention of the National Brotherhood of Operative Potters, held at Atlantic City, the following propositions were decided upon, which will be the basis for joint conference consideration between committees representing the Brotherhood and the Labor Committee of the United States Potters' Association. They follow:

That all sagger clay be prepared and put on floor ready for use, without any expense to the sagger maker.

That all green saggars be delivered, by the firm, to the kiln in which they are to be placed without extra work or expense to the sagger maker.

That kilnmen shall not be required to go beyond the kiln door or an equal distance in the rear of the next kiln from the one in which they are working, for their saggars, except where the kilns are built in such a manner that it is impossible to put the saggars around them. This condition shall be a matter for settlement between the local and the firm.

That all props, bats, tile, door liners, bitstone, fret and stain be delivered to the kiln door by the firm. Fret, stain and bitstone to be in saggars ready for the kiln.

That the kilnmen be no longer required to carry wad boards back to the wad room when their day's work is in the kiln.

That the measurement from the kiln door to the door of the green room or dipping room be abolished, and a new measurement established, from the kiln door to the center of the dipping room or green ware room.

That punching kilns and sweeping in the kiln shed by the odd men, while the kilnmen are still working in the shed be discontinued, and that the sweeping be done after they are through work.

That all top kilns and low, or what is known as sagger kilns, be placed by union kilnmen.

That all ware placed in the sagger bottom, in glost kilns, shall be rubbed or sponged by the firm before leaving the dipping room, this to include individual butters.

The dust caused by emptying saggars in the china kilns, where the kilnmen are working, is injurious to their health and we ask that this unhealthy condition be prevented by installing blowers or by emptying saggars when the kilns are being drawn.

That a committee be appointed to investigate the placing of china throughout the country, and make a standard price, at so many feet per kilnman's day's work, based upon the result of their investigation.

That kilnmen placing china and general ware be granted 10 per cent increase in wages.

That all printed, tinted, sprayed or stamped underglaze ware brought to the dipper stilted, spurred or boxed for dipping, and requiring special care, shall be paid for at the rate of 20 cents for every 50 dozen of regular dinner ware.

That the conference fix a maximum distance for dippers carrying boarded ware, and distances greater than the maximum to be paid extra.

That the use of raw glaze be abolished.

That the kiln-drawers shall not be required to carry saggars to the second kiln, unless an additional man is allowed on account of long carrying; nor required to

carry sand to another kiln from the one they are drawing. That kiln-drawers be granted a 10 per cent increase in wages.

That a uniform size and price list in all china branches be established.

That no foreign moldmaker be permitted to take a bench until the Standing Committee has favorably passed upon his credentials.

That 10 per cent on moldmaking be restored, and the price of blocking and casing shall be \$4.00 per day, and all alterations be paid for at the same rate.

That all articles not mentioned in the moldmaking list, and which are not classed with dinnerware or toilet sets, shall be classed as specialties, and the price settled on them as such, also that the manufacturers appoint a committee to act in conjunction with the moldmakers to make a uniform price on all unlisted articles.

No journeyman shall be discharged to make room for an apprentice and no apprentice at present employed shall be discharged for the purpose of establishing the foregoing ratio.

That the general ware pressers be granted \$3.50 per day when working at day wage.

That the general ware pressers and casters be granted 10 per cent increase on all articles except soup tureens, covered dishes, casseroles, 24s and 30s creams, pickles, sauce tureens, stands, oyster tureens and syrup jars and that all articles on the sticking-up list be increased 10 per cent, except slop jars, combinets and slop pails.

That whenever a vacancy occurs on a jumbo jiffer, through death, retiring from the trade, or accepting another position, the journeyman presser shall have the preference, provided that the N. B. of O. P. cannot furnish a jiggerman for the position.

That no more apprentice dishmakers be put on for at least one year, or until all journeymen dishmakers are steadily employed.

That the general-ware manufacturers be requested when orders are scarce to instruct their foremen to divide the work as equally as possible, and not lay off most of the force in order that a few may be given steady employment.

That \$4.00 per day shall be the basis used in figuring the piece price of new articles in general ware.

That it shall be the duty of the manufacturers to ventilate the packing rooms.

That all clay shops be swept every night after 6 o'clock at the expense of the firm. That heat be provided in all parts of every pottery.

That all potters suspend work at noon on Saturdays, and shall be paid not later than noon on pay Saturdays.

That the blower, or hot air system of heating be abolished. That the custom of giving and taking two weeks' notice be made a part of this agreement, and that such notice be given in writing. That all potteries provide sanitary closets for the use of their employes.

That all operatives working under this agreement between the U. S. Potters' Association and the N. B. of O. P. must be members of the N. B. of O. P.

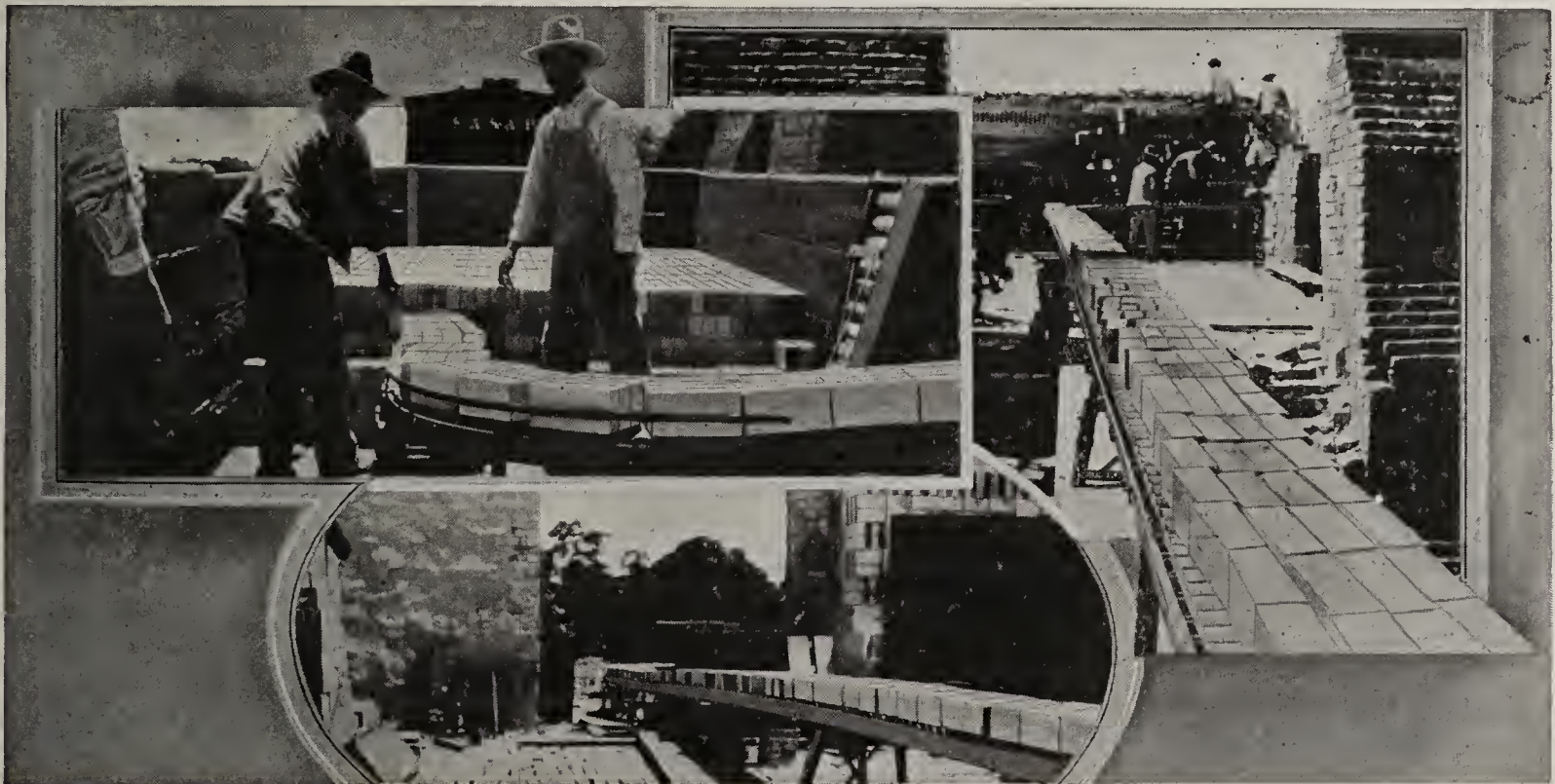
That the new wage agreement be made to expire on April 1, 1913.

MODERN BRICK CONVEYING

Evolution is a constant process, taking place every instant of time, and is not confined to any one phase of nature. What we are pleased to call civilized progress is nothing but evolution from one stage of enlightenment to another concerning the things which engage the attention of man in successive periods of existence. It is not a proper deduction to conclude that man in his initial state lacked mental power or initiative spirit. Evolution had its beginning with man, and man simply created conditions gradually which produced evolution as a natural sequence. Thus we have learned how ancient humanity tilled the soil by the aid of a crooked stick, and how, in the wake of competitive rivalry followed the evolution of the process of tilling and cultivating the soil until today we witness in astonishment the marvelous power devices for economizing time and labor in this work. To the student, to the dreamer, to the visionist, comes the thought:

pronounced and more far-reaching in its effects in the industrial world than in any other one field. All the processes of production have been aided and promoted by mechanical means—some of these being so intricate, complex and ingeniously constructed that we stand amazed and marvel at the ability of mere man.

Mechanical evolution has had its effects in the labor market, creating unpleasant conditions of unrest, dissatisfaction and open revolt. Time, however, has eradicated the hostility between the human and the mechanical laborer, the former recognizing how futile must be the effort to prevent his displacement. No matter how menial the employment may be, or how little remuneration it affords, it is not safe from the encroachments of mechanical devices. Even the dirt shoveler has had to give way to the steam shovel with its wonderful capacity for excavation. The plodding colored man cannot pick cotton fast enough



Views Showing How Matthews Gravity Brick Carrier Eliminates Drudgery and Expense of Hand Labor.

what will be left for the 20th century? After man has reached the climax of inventive creation, when the fields of mechanical and scientific research have been despoiled of their treasures and left barren of fruitage, what condition of chaos will overtake the civilized nations?

The idealist smiles in anticipation of that time, when man will enjoy the fruit of his labor—settle down to a rapturous contemplation of the millenium and prepare his moral life to conform to the code of heaven.

The commercialist looks for a condition of stagnation, the decline of ambition, the cessation of effort and the death of individuality.

The pessimist warns us of unheard-of evils, when the struggle for achievement, wealth and power shall have ceased. He can conceive of but two conditions possible to the human race—it must be industrious or it must be depraved. He pictures a nation given over to immorality—licentiousness and the whole gamut of excess.

The socialist declares it will be the realization of his dreams—when wealth will be distributed and social equality established; when political wickedness will bend to the knee of the Goddess of Justice; when trusts and monopolies will be separated from their ill-gotten gains and commercial freedom restored.

We believe that mechanical evolution has been more

to suit the modern overseers—hence the mechanical cotton picker. The poor horse, once the king of domestic animals, no longer plows the fields; he also is too slow—he is being displaced in all the various duties he was wont to perform. The steam plow, the power truck and the automobile have crowded old Dobbin to the wall. The day laborer with his wheelbarrow has had his day in the brickyards of the country. But like other slow, expensive and cumbersome methods he has had to go. A glance at the illustration accompanying this article illustrates the modern method of conveying brick from point to point, and how cars may be loaded from long distances by means of a gravity carrier, a simple device which employs one of nature's forces in its operation—natural gravity. The views were furnished by the Mathews Gravity Carrier Co., of St. Paul, Minn., and illustrates how easily the drudgery and expense of hand labor in this industry has been eliminated by an inexpensive device, which requires no power and no expense for up-keep.

And so on through the whole world of production we find mechanical agencies displacing the human in doing the world's work. The visible effect of the evolution is not patent. The only effects which have followed this evolution is in the reduction of hours of labor.

The growing popularity of the Mathews gravity carrier

in the manufacturing world is evidenced by the large number of firms which have installed this labor-saving equipment at their factories. Among the up-to-date brick concerns which have recently added the Mathews gravity carrier to their equipment are the following, which furnishes sufficient proof that the carrier fills a long-felt want:

Wyckoff Pipe & Creosoting Co., Inc., New York, N. Y.; Paul & Henry, Barberton, O.; Thurber Brick Co., Thurber, Tex.; E. A. Poe Brick Co., Fayetteville, N. C.; Winnebago Drain Tile Co., Winnebago, Minn.; W. M. Pattison Supply Co., Cleveland, O.; Charlotte Brick Co., Charlotte, N. C.; Bowlus Brick & Tile Mfg. Co., Bowlus, Minn.; Boone Brick & Tile Co., Boone, Ia.; Luverne Pressed Brick Co., Luverne, Minn.; Henry Schaefer Sons, Buffalo, N. Y.; Guignard Brick Works, Columbia, S. C.; Standard Brick Co., Palmer, Tex.; F. R. Carter, Peoria, Ill.; Barbourville Brick & Tile Co., Barbourville, Ky.; Southern Brick Co., Louisville, Ky.; Crutcher Bros., Louisville, Ky.; Globe Press Brick Co., Ferris, Tex.; Diamond Press Brick Co., Ferris, Tex.; Texas Press Brick Co., Ferris, Tex.; Lone Star Pressed Brick Co., Ferris, Tex.; Dunn Brick Works, Erie, Pa.; St. Joseph Pressed Brick Co., St. Joseph, Mo.; Lombard Brick & Tile Co., Lombard, Ill.; H. P. Knisley, Canton, O.; William Elder, Baltimore, Md.; Heilman Bros., Tiffin, O.; E. T. Lewis Co., Nashville, Tenn.; M. J. Beach, Baltimore, Md.; E. E. Morgan, Ravenna, O.; A. Heim Brick Yards, DuBuque, Ia.; John C. Boss Brick Co., Elkhart, Ind.; William Conway, Philadelphia, Pa.; Crown Brick Co., Berlin, Conn.; J. T. Lynch, Circleville, O.; Wm. Hatch & Son Co., Goshen, Ind.; The National Tube Co., Lorain, O.; Corry Brick & Tile Co., Corry, Pa.; Fulton Fire Brick Co., Fulton, Mo.; Sudbury Brick Co., Ltd., Sudbury, Ont.; Portsmouth Granite Brick Co., Firebrick, Ky.; W. F. Cox, Cedar Rapids, Ia.; Gold Bros. Brick Co., Big Stone City, S. D.; Whiteselle Brick & Lumber Co., Corsicana, Tex.; Windsor Bros., Akron, O.; Whitacre Fireproofing Construction Co., Chicago, Ill.; Patrick Reddington & Sons, Baltimore, Md.; Silica Stone Co., Planebrook, Pa.; Suburban Brick Co., Wheeling, W. Va.; Palmer Brick Co., Atlanta, Ga.; Arnold-Creager Co., New London, O.; Dublin Brick Co., Dublin, Ga.; D'Hanis Brick & Tile Co., D'Hanis, Tex.; Dallas Pressed Brick Co., Mesquite, Tex.; Cobb Brick Co., Fort Worth, Tex.; J. P. Duffy Co., New York, N. Y.; Barber Asphalt Paving Co., New York, N. Y.; Field, Barker & Underwood, Norfolk Navy Yards, Portsmouth, Va.; Wichita Falls Brick & Tile Co., Wichita Falls, Tex.; Aetna Engine Works, Menominee, Wis.; Alberta Clay Products Co., Medicine Hat, Canada; Minneapolis Brick & Tile Co., Minneapolis, Minn.; Craycroft-Herrold Brick Co., Fresno, Cal.; Zeeland Brick Co., Zeeland, Mich.; Chicago City Railway Co., Chicago, Ill.; Kellar Brick Co., Cuyahoga Falls, O.; Eureka Brick Co., Lynnhaven, Va.; Landers-Morrison-Christenson Co., Minneapolis, Minn.; Great Eastern Clay Co., New York, N. Y.; W. M. Harris, Jr., Providence, R. I.; Garden City Sand Co., Chicago, Ill.; C. J. Anderson, Marinette, Wis.; Jamestown Shale Paving Brick Co., Jamestown, N. Y.; Jamestown Street Railway Co., Jamestown, N. Y.; Lawrence Vitrified Brick & Tile Co., Lawrence, Kan.; Alsip Brick & Tile Co., Ft. William, Ont.; Woodcock & Sellhorn, Brickton, Minn.; P. Flannigan & Sons, Baltimore, Md.; M. K. Beach, Baltimore, Md.; Livesey Brick Co., Omaha, Neb.; Wise, Smith & Krabil, Canton, O.; W. H. Ringwald & Sons, Richwood, O.; Geo. Long Contracting Co., Baltimore, Md.; Cook & Brown Lime Co., Oshkosh, Wis.; Turnbull & Son, Canton, O.; W. E. Forshee & Co., Cincinnati, O.; Clay Products Co., Brazil, Ind.; Stone &

Webster Engineering Corp., Minneapolis, Minn.; N. Y. C. & St. L. R. R., Cleveland, O.; M. Ford, Cedar Rapids, Ia.; American Clay Machinery Co., Willoughby, O.; Hummelstown Brown-Stone Co., Waltonville, O.; J. B. Ford, Harrisburg, Ill.; E. D. Bowen, Twinsburg, O.; Drury Brick & Tile Co., Essex Junction, Vt.

BUYS CONTROLLING INTEREST.

The controlling interest in the Davis-Price Foundry & Machine Co., of New Cumberland, W. Va., formerly owned by Davis & Price, has been purchased by J. R. Gilcrest, of Toronto, Ohio.

Mr. Gilcrest was the owner of the Toronto Machine Co., of Toronto, Ohio, and successfully managed the same for about 12 years, when he sold out to the Means Engineering Co., of Toronto, Ohio, formerly of Steubenville, Ohio, and known there as the Means Foundry & Machine Co.

The identifying of Mr. Gilcrest with the Davis-Price Co. joins the forces of two of the most successful manufactures of brick and clayworking machinery in the country.

The reputation of these concerns for accurate work is unexcelled. Both firms have always commanded the best prices for their work, and have made a specialty of remodeling brick and clayworking plants that have been considered failures, owing to "poor installation, inferior dies, etc. They are installing improved machinery, including a 10-foot and 4-foot boring mill and 36-in. lathe, which with their regular equipment prepares them to handle anything from a sewer-pipe press down to the smallest machine parts.

This firm builds presses, pans, pugmills, brick and sewer-pipe dies, and relines repress and sewer-pipe dies. In their woodworking shops they build all kinds of trucks and barrows, drums and cradles, and can furnish at short notice repairs for any make of wet or dry pan. They have just gotten into their new brick building and are enjoying a first-class trade. The officers of the concern are: J. R. Gilcrest, president and treasurer; Thos. Shaw, vice-president; A. M. Shetter, manager, and F. Shetter, secretary.

MANAGER RESIGNS.

Mr. Geo. H. Smith, western manager for the C. W. Raymond Co., for the past six years, with office at 325 Bryant Bldg., Kansas City, Mo., has tendered his resignation and will sever his connection with that company August 15th.

TOURING THE CONTINENT.

E. M. Freese, head of the E. M. Freese Company, of Galion, O., accompanied by his wife, sailed from New York, June 21st, for a trip abroad. They will spend three months on the continent and will spend considerable time in Germany, France, Italy and Spain.

NEW REPRESENTATIVES.

The Ohio Ceramic Engineering Co. announce that their Chicago office at 1015 First National Bank Bldg., is now in charge of Messrs. French and Allen, both practical engineers and familiar with the designing and construction of all types of contractors' and industrial-railway equipment. Special designs will be furnished by these gentlemen upon request. A large stock of the Lakewood line, "Built to Last," is carried in the Chicago warehouse.



STATISTICS FOR 1910.

As shown by the report for 1910 by Jefferson Middleton, of the United States Geological Survey, the sand-lime brick industry was in a prosperous condition during the year 1910, showing a slight increase in value of production over that of 1909. Two more plants reported in 1910 than in 1909, making a total of 76 as compared with 94 in 1907, the year of maximum activity. The year 1910 showed a slight increase of 1.61 per cent over 1909 in value of production, but failed to reach the figures of 1907, the record year, by \$56,616.

GOOD DEMAND IN WEST.

Our California correspondent advises us that there is more demand for sand-lime brick there than for several months past. Mr. Pratt, manager of the Golden Gate Brick Co., states that deliveries have been started for the Collis P. Huntington memorial social hall at the Southern Pacific Hospital, San Francisco, a two-story building, 40 by 70 feet Golden Gate Sandstone brick is also being used for the Marin county bank building, at San Anselmo, Cal., and for a grammar school at Madera, Cal., which will require about 250,000 of these

Production of Sand-Lime Brick in the United States in 1910, by States and Kinds.

State.	Number of operating firms reporting.	Common brick.		Front brick.		Total value.
		Quantity (thousands).	Value.	Quantity (thousands).	Value.	
California	5	3,094	\$27,368	1,097	\$16,144	\$43,512
Colorado, Idaho, Montana, and Washington.....	6	5,786	52,724	2,676	38,054	90,778
Delaware, District of Columbia, Maryland, North Carolina, and Virginia	7	3,224	25,751	(²)	(²)	42,455
Florida	4	12,685	77,950	(²)	(²)	85,450
Georgia and Mississippi	3	3,606	20,489	(²)	(²)	24,146
Indiana	5	13,869	63,134	(²)	(²)	63,534
Iowa	3	(²)	(²)	(²)	(²)	31,269
Kansas, Nebraska, North Dakota, South Dakota, and Texas	7	17,440	132,827	831	9,289	142,116
Kentucky and Ohio	3	5,232	32,050	.....	.....	32,050
Michigan	10	37,648	218,627	(²)	(²)	240,649
Minnesota	5	22,444	145,705	544	7,345	154,250
New Jersey	3	1,512	9,254	(²)	(²)	23,811
New York	7	14,647	89,150	.....	.....	89,150
Pennsylvania	4	11,854	72,827	.....	.....	72,827
Wisconsin	4	4,426	29,055	(²)	(²)	29,399
Other States ¹ .....	..	3,513	26,906	6,156	52,342	(²)
Total	76	160,980	\$1,023,817	11,304	\$123,174	\$1,078,375
Average price per M.....	..	.....	6.36	.....	10.90	.....

¹ Includes all products made by less than three producers in one state to prevent disclosing individual operations.

² Included in "Other States."

³ The total of "Other States" is distributed among the states to which it belongs in order that they may be fully represented in the totals.

As shown by this table the value of the product increased \$18,573 in 1910. In 1909 the increase was \$120,881. Michigan led in 1910, as it has for several years, reporting products valued at \$240,649, being a gain of \$22,423 over 1909. The product of this state constituted 20.58 per cent of the total value of the sand-lime products in 1910. The largest increase was shown in the state of Minnesota, the increase being \$41,181, making it second in rank. New York was third in both years, Florida was fourth and Pennsylvania fifth. Indiana showed the largest proportional gain of 93.71 per cent. Two states, Iowa and New York, showed a decrease in value of product. In the number of plants New York ranks second to Michigan, showing seven plants in 1910, the same as reported for the two previous years.

The average price paid per thousand for common sand-lime brick in 1910 was \$6.36, as compared with \$6.39 in 1909; for front brick \$10.90, as compared with \$11.98 in 1909. In 1910 common sand-lime brick represented 87.57 per cent of the value of sandlime products, front brick 10.53 per cent and all other products 1.90 per cent.

A sand lime plant in Germany has a daily capacity of 350,000 brick per day. A plant with a capacity of 50,000 per day is considered a big one in the United States.

brick. The Masonic Temple at Fresno, Cal., faced with enameled brick made at this company's Stockton plant, has just been completed, and the same material is being used for an office building at Willows, Cal. This company has built a large storage shed at its sand-lime plant at Antioch, Cal.

NEW PLANT STARTED.

We are informed that Herman Schmeck, of the Saginaw, Mich., Sandstone Brick Machinery Co. and John C. Reinke, of the Saginaw Sandstone Brick Co., have started a sandstone brick plant at Michigan City, Ind., with a capacity of 80,000 brick per day. There is a vast quantity of sand at Michigan City and this will be experimented with and such changes made in the machinery and processes are to produce a first-class sand brick.

PLANT READY FOR BUSINESS.

The New England Brick Co., manufacturers of sand-lime brick, with offices in Hartford and factory in Farmington, Conn., begun operations at their plant on July 15th, and Mr. Leon LeClair, formerly with the Jacobs Brick Co. of Berlin, Conn., now selling agent for the New England Brick Co. reports a large number of orders already on hand.

MACHINERY INSTALLMENT.

The Rockport Drain Tile Co., of Rockport, Ind., has been reading the advertisements of the Stevenson Co., of Wellsville, O., in "Brick and Clay Record" to some wise purpose, and has contracted for a full equipment of Stevenson's drain tile machinery for a one-press plant with a full set of dies for making 30 and 36-inch tile. The outfit is already on the road to its destination.

UP-TO-DATE LITERATURE.

The American Blower Co., of Detroit, Mich., are thorough converts to modern methods of publicity, as is evidenced by the amount of attractive literature which they send out, describing the various appliances manufactured at their plant. Especially noteworthy, among those recently received was a small brochure, describing the various uses to which the American Blower exhaust fans may be put, which includes exhausting dust from emery grinders, buffing and polishing wheels, drawing smoke and gases from forge fires, dust from cement plants and flour mills, etc., and removing shavings, dust and refuse from wood-working plants. This company has effected some very efficient devices for ventilating kitchens, dining rooms, offices, underground passages, toilets, etc., using the same method for drawing out the impure air as that used in its other fans.

STEAM SHOVEL NEWS.

"Steam Shovel News" for June contains, among many other interesting articles, an instructive article on electrically operated shovels and dredges, showing the recent improvements which have been made in these lines by the use of electricity as motive power.

ROPE DRIVE.

"The Labor Saver" for July, issued by the Stephenson-Adamson Mfg. Co. of Aurora, Ill., contains some interesting and useful articles concerning recent developments in various mechanical lines. The article of more particular interest to the clay working industry is that of "Rope Drive." Among the interesting thoughts noted are the following:

"Rope transmission has many advantages, both as to economy in installation and operation. Rope is used where large amounts of power must be transmitted for a considerable distance.

"The power capable of being transmitted by a rope drive is limited only by the space taken up by the equipment and by the mechanical difficulties attendant upon large machinery." It is said that for the same width of room, a rope sheave is almost twice as effective as a pulley driven by the heaviest belt. A number of clay plants throughout the country are equipped with rope drives, which are operating most satisfactorily, with greater space economy and greater efficiency than other systems formerly used.

"For extremely complicated drives, where power must be transmitted to a number of different shafts and especially where these shafts are not parallel, the flexibility of the rope drive appeals to engineers. The attention required to care for a rope drive properly designed is practically reduced to occasionally lubricating the bearings. The life of a good rope drive under proper conditions should be at least eight to ten years, with little attention."

An added advantage to this system of transmission is that it is positive and steady, running smoothly and noiselessly and giving no trouble from slipping. It is especially adapted for use in connection with conveying machinery.

Those who have occasion to use a rope drive would do well to have the same laid out by a competent engineer, experienced in this line of work. The engineering department of the Stephenson-Adamson Mfg. Co. are prepared to solve these difficulties for their customers at no additional expense.

CLAYS OF OKLAHOMA.

The Oklahoma Geological Survey Bulletin No. 7, containing a report on clays and the clay industry of the state of Oklahoma, has been issued by the Geological Survey of that state.

This report is for general distribution and will be sent to any one upon request to Chas. N. Gould, director of the Geological Survey, Norman, Okla. Eleven cents should be enclosed to cover the cost of postage.

BUTTON-HOLE TALKS.

Few men connected with the clay industry are better known or better liked than Mr. Wm. D. Gates, president of the American Terra Cotta Co. of Chicago. Mr. Gates is not only a remarkably well informed clay worker, but he is a man of varied talents, not the least of which is his ability as a literateur and story teller. A lasting monument to his literary talent is the handsome little book entitled "Button-hole Talks," a small edition of which has just been issued for Mr. Gates' particular friends. This is a collection of little talks from a series which Mr. Gates contributed at various times to the "Clay Worker."

CEMENT MILLS FORCED TO SUSPEND.

The "Philadelphia Press" states that owing to the decreased demand for and the low price of cement, there is anticipated in cement circles throughout the Lehigh region, a very general suspension during the next month or two. Cement people declare that the price is so low that it is next to impossible to run the plants without loss.

Within the past few days a number of mills were closed, including the entire plant of the Vulcanite, located in New Jersey. This plant employs about 700 hands and will be idle for at least four weeks.

The Edison Cement Co. at New Village, N. J., has shut down for ten days, and on resuming will curtail production. The Atlas Cement Co., up the Lehigh, has shut down indefinitely one mill with a capacity of 8,000 barrels a day. The Coplay plant has closed and the mills of the Alliance Co. are out.

HOLLOW BLOCK WALLS WITH OUTSIDE VENEER OF BRICK.

A subscriber writes as follows: "I have built for myself a small house in which I have used hollow terra cotta building block for the walls with a veneer of brick on the outside,—all of the partitions and the foundation being of hollow block. It is two stories and attic above basement. I have had no difficulty in keeping it warm in winter and find it far cooler in summer than any house I have ever lived in. I have had a wide experience in building houses and firmly believe that I have solved the problem in a most satisfactory manner. The cost, it may be added, exceeded very little that of wood construction."

PIONEER BRICK MAKER DIES.

Albert Terry, one of the pioneer brick manufacturers of the Hudson River district, died at Kingston, N. Y., recently, at the age of 78 years. He was the first brick manufacturer to use anthracite coal, for burning brick.



Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers— Market Fluctuations and Industrial Prospects

SPARKS FROM THE WIRES.

The Springfield (Ill.) Drain Tile Co. has been organized with a capital of \$30,000 to manufacture and sell clay products. The incorporators are Jos. A. Long, Chas. G. McIntosh and John F. Miller.

The Center Point (Ind.) Brick Works has filed notice of its dissolution.

The Valley Shale Brick Co. is the title of a new corporation which has been organized at Cleveland, O., with a capital stock of \$25,000, by H. H. Camp, H. H. Anderson, Hazel Kehrens, Joseph Moore and W. T. Elwell.

The United brick works, one of the Mack Co.'s plants, north of New Cumberland, O., was burned to the ground recently. A number of the workmen's houses on the hill near the factory were also reduced to ashes, the flames communicating to them from the factory. The loss will amount to several thousand dollars.

The Maynard H. Murch Company of Cleveland, O., has purchased the brick and other clay products belonging to O. Edward Holden, of Mineral City, O., for \$150,000. The sale includes 600 acres of clay and coal lands, a business block and the Imperial Hotel.

A new tile manufacturing plant will be put into operation in Clackamas county, Oregon, very soon. A tile factory has been erected by Frank Spurlark at New Era, in which the machinery is being installed.

The Westend Mfg. Co. has been incorporated at Craggy, North Carolina, post office, Asheville. The company is capitalized at \$10,000, for the purpose of manufacturing brick. The incorporators are Thos. F. Davidson, Haywood Parker and Louis M. Bourne.

Three young men were badly scalded recently, by the explosion of a boiler at the plant of the Wileman-Helbring brick yards, Ironton, O. One of the young men was also struck by a flying brick, and is not expected to live.

The E. N. Jelks Brick Co., Tampa, Fla., is furnishing the brick for the new car barns of the Tampa Electric Co. One hundred and fifty thousand face brick will be used in the exterior of the building and 850,000 on the interior.

The Fitchburg (Mass.) Brick Co. has recently undergone a complete transformation, not only in its management but in its manner of manufacturing, having recently installed one of the most up-to-date brickmaking machines on the market. Mr. H. E. Doty, an expert brick man, of New Haven, Conn., has been engaged as general manager and superintendent. A new machine house has been built which is equipped with electric power. The capacity of the plant has been increased to 5,000,000 per year.

The tile works at Lafayette, Ind., has been sold by C. Kalberer to Alfred Frey, who will operate the plant.

The Ohio Face Brick Co. has been incorporated at Fredericksburg, O., by A. G. Putnam and others. The company is capitalized at \$70,000.

A. A. Fordon, Detroit, Mich., a representative of the Chas. Palms Estate, is endeavoring to interest the business men of Cayuga, Ind., in forming a company for the purchase of the old brick plant at Cayuga. This property represents an investment of \$175,000 to \$200,000. It is estimated that an outlay of \$7,000 will be necessary to get the plant in shape to start after its long idleness.

C. B. Hawley, Morocco, Ind., has purchased the plant of W. O. Gourley, Paxton, Ill.

The North Indiana Brick Co. has been incorporated with a capital stock of \$40,000 at Michigan City, Ind. The

directors are J. L. Jackson, E. D. Church, R. K. Rosseguie, S. S. Roby and J. C. Reinke.

Dr. Geo. W. Haskins, Detroit, Mich., is at the head of a company known as the National Brick and Sand Co., which has purchased the plant of the Eggers Brick Co., South Brooklyn, O.

The Dickinson Fire Brick Co., Buena Vista, Va., will establish a plant costing about \$250,000 to refine paper clays.

The Brillion (Wis.) Brick & Tile Co. has installed electric power at its brick yard to take the place of gasoline. The power will be supplied by the local electric light company.

The Marion (Ill.) Pressed Brick Co. states that the demand for its brick is exceeding the supply. Several local buildings, constructed with these brick recently, are a standing advertisement for the company.

THE BLUEGRASS REGION.

Louisville, Ky., July 25.—Business in the local market is progressing favorably, and the volume of trade being handled is well up to the normal. There are a number of big buildings in prospect, and all of them will consume a big volume of material. The Falls City Construction Co. is preparing to let contracts for the erection of a 10-story office building at Center and Jefferson Sts. The contract for the structural steel has been awarded, and the cut stone and brick contracts will be given out shortly. The general contract for the \$300,000 Weissinger-Gaulbert apartment house annex has gone to the Selden-Breck Construction Co., and it will probably let the contract for the brick work, of which there is a good deal, within the next month or two. Several other tall buildings are in prospect. Brinton B. Davis is drawing plans for the 18-story office building of the Inter-Southern Life Insurance Co. at Fifth and Jefferson Sts. It will probably not be gotten under way for several months, however.

A good deal of attention has been attracted to the Tyler Hotel at Third and Jefferson Sts., the brick work on which was done by the Levi Tyler Land Co., of which Owen Tyler, the well-known brick man, is the head, because of the fact that the brick were laid in black mortar, this effect being secured through the use of Pecora water stain. On account of the glazed terra cotta trimmings being white, a pleasing contrast is afforded.

Those who are working for the success of the Louisville Brick Club believe that some of the members of the trade are not showing the proper amount of interest. It has been thus far impossible to secure the memberships of some of the leading brick contractors, although it has been pointed out to them that they are vitally interested in the well-being of the brick trade, even more so than the manufacturers of brick. Efforts will be made in the near future to secure the co-operation of the contractors, as it is believed that they will deem it wise to co-operate in the vigorous campaign which is being pushed for the purpose of getting the brick men properly before the public. The Jeffersonville and New Albany yards, which are across the river in Indiana, are now co-operating and have joined the club. A meeting of the organization was held June 27th with Joseph Nevein, of the Louisville Brick Co., in the chair. The session took place in the Tyler Building.

A peculiar feature of the situation in Louisville, according to well known brick men, is the obsession which has taken hold of many in favor of cement block foundations. In many cases brick is obviously the proper ma-

terial, and this is recognized by the fact that the sub-foundations are being laid with that material. On top of the brick, however, cement blocks are laid. A brick contractor said that he noted this anomaly recently in connection with five cottages for which he was making deliveries. He believes that a little judicious and educational advertising along this line would be a good thing.

A recent piece of publicity work of the Louisville Brick Club was an illustrated story in one of the local dailies describing an old landmark, a brick house erected in Portland, the oldest part of Louisville, in 1804. The present occupant is eighty years old and remembers when it was the finest mansion in Louisville. It is still in excellent condition.

The Hydraulic Brick Co., of Louisville, has changed its "copy" in the street cars, and is running a series of ads dealing with the houses in "Average Row." The ads are in the form of jingles and show how the owner of a house built of good red brick sees others of wood and stucco and cement come and go while his stands up under the stress of storm and weather, requiring little attention, few repairs and minimum charges for insurance. The cards are happily illustrated, and have made quite a hit with local people.

Clark Bros. are operating a tile plant on Pond River, near Sebree, Ky., and are reported to have more business.

The Clay Products Co., which was recently organized at Wickliffe, Ky., has secured several buildings and placed an order for clay-working machinery and will begin operations as soon as it can be installed. J. C. Lysatt, a New Jersey man, who has had long and practical experience in the clay product business, has been made superintendent. The company will manufacture all sorts of clay wares.

The plant of the Carrollton Brick Co., of Carrollton, Ky., which has been idle for some time, has been reopened, and is booming along at a lively rate. A fine grade of pressed brick is being put on the market. Stanley Grobmyer has been put in charge as superintendent, and is developing a lot of business.

Word has been received of the organization at Chattanooga, Tenn., of the Dixie Clay Products Co., which has a capitalization of \$100,000. John S. Spence is president, Alvin Spears vice president, and J. W. Abel treasurer. The company will have a plant at Graysville, near Chattanooga, and will manufacture roofing tile, flower pots, fire brick, etc.

THE KEYSTONE STATE.

Philadelphia, July 27.—General business conditions have not improved any, all lines are quiet, collections are slow and people are afraid to invest money in building or new enterprises, except what is absolutely necessary. The season is fairly well advanced now and there has not been any great activity, only a fair trade being done in the line of brick, terra cotta, pottery, sewer pipe, etc. It does not look, from present indications, as if there would be any change this year or possibly not even next year. The recent decisions as to the status of Standard Oil and tobacco trusts, have not cleared matters much as the people are still in doubt, the decisions not being complete. The talk as to reciprocity is not opposed here nor at any other center to any extent and it would undoubtedly be a good thing in promoting trade relations and increasing business between this country and Canada. As to the tariff question in general too much bickering will do no good and only such duties should be lowered as will decrease the cost of living for the poor people. Any further monkeying with the tariff will prove a bad thing. All these things have been disturbing elements in the business conditions of the country. And next year comes the presidential election which is always a quiet year in business. So that in about two years we look for a big boom and people will then complain that they have too many orders, will be working day and night and getting not enough sleep. It is better to complain about too much work than too little, however.

The Reading Road will build a new station at Logan, Pa., using rough, red brick. Contracts have not been let so far as is known.

The Building Brickmakers' Association is doing a good work through advertising in the leading journals as to the uses and advantages of brick and stimulating greater interest in the trade. Members of the association pay to-

wards its expenses in proportion to the number of brick each one turns out, the larger brickmaker paying in more than the small one.

The building of brick residences in the extreme ends of the city continues fairly good and a considerable number of this class of structures have been erected this year, particularly in West Philadelphia. Shellenberger & Smith, representing the Akron (O.) Tile Factory, say they had a bad fire a short time ago, but they have now resumed operations and are running at full capacity. The most modern machinery has been installed, the capacity increased and they are now in a position to fill orders promptly.

The Conklin-Armstrong Co. furnished the terra cotta for the new Curtis building, which is one of the finest business buildings here, and which will be occupied entirely by that publishing concern.

The Equitable Brick Manufacturing Co., under the management of the two Kimballs, is doing well and manages to keep busy.

The Grapeville Fire Clay Co., of Mt. Pleasant, Pa., now has one of the best plants in the state, having made many improvements and enlargements.

The Queen's Run Fire Brick Co., Lock Haven, Pa., has erected a new air shaft at its clay mines and thereby increased its capacity considerably.

The Aldan Brick Co. is keeping its weather eye open for business and is getting busy.

J. B. Hammond, Bolivar, Pa., has bought the Reese-Hammond Fire Brick Co. and the United States Enamelled Brick Co. for his concerns, the Phoenix Fire Brick Co. and the Bolivar Face Brick Co. The plant the latter company has taken over makes a high-grade face and paving brick, contains 250 acres of clay lands, comprising flint clay, refractory clay, plastic clay and clay for terra cotta making. They have 9 seams of fire clay, 3 of shale, 3 of silica rock and 2 of iron ore. The capacity of the Bolivar Face Brick Co. now is 100,000 a day.

The North Hudson Brick Co., which was incorporated with \$500,000 capital, at Newburgh, N. Y., to manufacture brick and tile, will have offices at Union Hills, N. J.

Cooper & Lucas, representing the Federal Terra Cotta Co., with offices in the Real Estate Trust Building, have contracts to furnish the terra cotta for the St. Patrick's Church building, a 7 story bank building at Fifty-second and Ludlow streets, this city, and St. Matthew's Church in Washington. Business is good with them and they have a lot of work in prospect.

Peter Stipp has bought the Scranton Vitriified Brick & Tile Co., at Dunmore, Pa.

The New Jersey Chapter, American Institute of Architects, held an exhibit at the Public Library in Newark, N. J., and is planning several lectures on architectural subjects to be given this year.

O. W. Ketcham secured the contract for the enameled terra cotta to be used for the facade of the new Olympic Theatre to be built at Trenton, N. J.

The Mack Manufacturing Co., or the Land Title Building, has had a claim before the Interstate Commerce Commission, claiming that the Pittsburgh, Cincinnati, Chicago & St. Louis Railway overcharged them \$23,938 for paving brick shipped to Central Freight Association territory, and points within trunk line territory. The brick were carried at a rate of 22½ cents per cwt. which the Mack company claims was too high by 1½ cents.

William Conway and John H. Early are meeting the situation with their well known hustling ability.

S. B. Dobbs says trade is better than last year with him. He sells the product of 16 factories, having a most complete assortment of brick. He says first quality flashed is bringing \$25.00 per M. He has furnished 2,125,000 brick for the Curtis Building, has a big job of 125,000 tapestry brick for St. Patrick's Church, closed an order for 200,000 grey tapestry brick for the Baltimore (Md.) Bargain House and 200,000 brick for the Army and Navy Club at Washington, D. C.

The Philadelphia Brick Machine Works say trade is quiet, not much disposition on the part of clayworkers to buy new machinery, and business is moving slowly. They are simply waiting for better conditions which they look for later.

The Mosaic Tile Co., Zanesville, O., has moved its New York office to 30 West Twenty-fourth street. A. F. Picolet is their agent there in the Real Estate Trust Building, and he is looking after some good orders for ceramic, encaustic and mosaic tile. T. H. Garvin, Jr., will go on the road for Peacock & Roop, 1017 Filbert street.

WEST VIRGINIA.

Wheeling, W. Va., July 12.—There does not appear to be any let-up in new business so far as the brick manufacturers of the Pan Handle state is concerned, and especially is this true of the manufacturers whose plants are in the Hancock County territory. The latter factories are working to the limit, and with large orders still on the files. Demand for all grades of brick in this state this year is exceeding that of 1910, although here and there some are heard to say that "business is not what it ought to be."

On July 22nd the plant of the Belington Brick Co., at Belington, W. Va., is to be offered for sale at public auction to the highest bidder. Together with the plant will be sold fourteen acres of valuable clay and shale suitable for the manufacturing of both building and paving brick. The plant has a capacity of 50,000 brick per diem and is located on the Belington & Beaver Creek branch of the Western Maryland railroad. The property is in readiness for operations.

Additions are being built to the plant of the West Virginia Fire Clay Mfg. Co. in the vicinity of New Cumberland.

Hand-made brick will be the product of a new brick yard which is being built by the Freeman Brick Co. at Holbert's run in Hancock county. An old plant on the property is being improved and additions built. In addition to making brick the company will also make a specialty of grinding fire clay for refractory purposes.

The Suburban Brick Co., of this city, is running almost full with orders for building and paving brick. Their plant is one of the most complete operating in this vicinity.

TWIN CITIES AND THE NORTHWEST.

Minneapolis, Minn., July 27.—The first six months of the year showed a better total in the way of building than might have been expected, in view of the somewhat general conservatism which pervades all lines of business, which has become rather more general in the last few weeks, when crop prospects grew less promising in some sections of the Northwest. Owners who contemplate erecting new structures, particularly commercial men, are inclined to hold off until they know better what the condition of things will be in their localities. The result is that there are a number of new store buildings projected throughout the country, generally of brick construction, which are in abeyance until the crop is assured.

The disclosure of an organized gang of firebugs in Northern Minnesota which has made a practice of burning buildings and robbing stores and postoffices, has called anew attention to the abnormal fire losses of stores throughout Minnesota. In some cases the matter is supposed to have been encouraged by merchants who found themselves involved beyond their capital and when a suggestion was made of a mysterious fire and a settlement by the insurance companies, it was not always refused. But the owners of such buildings, many of whom had little or no insurance, now see the advantage of fireproof construction. Brick structures, properly built, cannot be fired by boring a hole through the side, inserting an oil-soaked wick, firing it and then having the cause attributed to spontaneous combustion, the ever-convenient cigar stub or the old reliable rats gnawing matches. So even in the lumber country, where lumber is comparatively cheap, the question of brick construction is receiving more attention than ever before. The fire marshal is paying more attention to the work of suppressing incendiarism and arson, so that there will be greater inducements to invest in permanent structures.

Much interest is being developed in the plans of the Barr Clay Products Co., which has been formed by Ed. Barr, of Mason City, Iowa, and for many years a prominent clay manufacturer of Austin, Minn. Associated

with Mr. Barr are parties from Wanamingo, Minn., Kenyon, Minn., and elsewhere. Work has been begun at the site of the clay bed, which is located adjacent to the tracks of the Milwaukee & St. Paul Ry. between Wanamingo and Zumbrota, Minn. The claybed is something like 80 feet higher than the site of the plant, which assures a gravity delivery of the clay from the bed to the works. A side track has been laid into the site of the plant, and a very elaborate plant is to be installed there. It will be equipped for producing Colonial and tapestry brick, drain tile, hollow building block and other materials. As has been previously announced in these columns, it is the intention of the company to establish a plant in the Midway District, between Minneapolis and St. Paul, as well.

Much soreness and disappointment have been experienced around Fairmont, Minn., over the outcome of the Fairmont Drain Tile & Brick Co. enterprise which was promoted at Fairmont, Minn., and capital raised for the establishment of a plant. Stock was sold to many farmers in the vicinity, and glowing expectations were held forth in the published prospectus. Now that the plant is completed, at a cost of \$90,000, it is found that the clay of the bank depended upon, is not suitable, owing to a preponderance of lime in it, which causes the tile and other goods to break and crack in the burning. An experimental kiln was burned, and the product was not satisfactory. A shutdown followed, and unless a better bed of clay can be found in the vicinity, the enterprise will be a fruitless one.

E. H. Cobb, of the Hydraulic-Press Brick Co., of Minneapolis, is pushing a project for the establishment of a new department store enterprise at Third street and Nicollet avenue, Minneapolis, where relatives are interested in a tract of property which it is proposed to have improved by a new six-story building for the new enterprise.

Frank McDonald, superintendent of the city workhouse in Minneapolis, claims to have produced in one day of eight and a half hours, 48,000 brick, with a workhouse crew of 65 men, thereby beating the total of a nearby commercial yard, with an experienced crew of brick workers. This workhouse brick plant is a sore point with the Minneapolis brick trade, which does not not feel that it is right that the honest manufacturer should be given the unequal competition of workhouse-made brick.

The supreme court of Minnesota recently ruled that it is an employe's duty in handling loose planks for a shifting staging, to see that they are adjusted and kept in place. The question might be of interest to brick manufacturers as well as to brick contractors. The ruling of the court was that when the employer had provided a safe scaffold, which was to be shifted from place to place as the work required, it devolved upon the workman to exercise diligence in adjusting and keeping it in place.

The new plant of the North American Brick and Tile Co., at Walsh, near Tower, Minn., on the Vermillion Iron Range, has just burned its initial kiln, with good results. An extensive plant has been installed there.

The Missouri Slope Brick & Tile Co., of Dickinson, N. D., is being reorganized under the title of the North Dakota Brick Co. W. J. Elliott has been engaged as manager of the plant.

Duluth, Minn., has recently had a price war on brick, with the result that the selling price went down from \$8.80 to \$5.90.

Earl H. Fleming, of the Builders' Material Co., Fargo, N. D., was a recent visitor in the Twin Cities. Mr. Fleming's firm handles an extended line of brick of different grades and classes, and is working up a good business in Fargo. North Dakota is expected to show a much better volume of business this year than last, when the crop disappointment cut down business materially. Much of the state now has expectations of a better yield than common, and there is a great deal of building which has been deferred from last year, which may be taken up this fall, if the crops turn out as good as they are expected to do.

Minneapolis building permits for six months of 1911 show a slight gain over the totals for 1910 for the first half of the year. This is a showing which was hardly to be expected, under all the conditions ruling, and gives a good promise for a better showing for the second half of the year.

C. P. Garrison, of Bloomington, Ill., who has had 20

years' experience in the brick business, has taken charge as superintendent of the plant of the Standard Lime & Brick Co. at Missoula, Mont. Construction work is being rapidly rushed.

The Rockford Brick & Tile Co., of Rockford, Iowa, has increased its capital stock from \$75,000 to \$100,000. J. W. Brown is president and R. F. Bruce secretary of the company.

The A. C. Ochs Co., of Heron Lake, Minn., is expending a large amount of money in expanding its brick and tile plant in order to keep up with the demand for its goods.

The Deerlodge (Mont.) Brick Co. has its new plant ready for operations. The machinery was furnished by the Henry Martin Machinery Co. The output will be about thirty thousand per day. Mr. John Berne is the manager and superintendent.

Charles Gould, F. H. Elmore and E. A. Newlon, the latter of the First National bank., have bought an interest in the Missoula (Mont.) Brick & Tile Co., and will hereafter be actively identified with that concern. They replace W. F. Carey, D. J. Carey and W. C. Murphy as members of the board of directors.

The officers of the reorganized company are: president, J. T. Sterling; vice president, F. H. Elmore; secretary, H. D. Galausha; treasurer, E. A. Newlon; manager, Charles Gould.

The new Methodist church and several residences in Missoula, built of brick made by this company, show to the citizens of that place that brick of as good a quality as those from distant points may be had from the home plant. The company expects to make 1,000,000 brick before fall.

INDIANA.

The brick factory located at Brooklyn, Ind., owned and operated by Greenfield capitalists, is running full time, turning out brick at the rate of 60,000 per day, and shipping them at good prices. Mr. F. G. Banker, who formerly operated a brick factory at Greenfield, has the management of the plant.

The North Indiana Brick Co. has been incorporated at Michigan City with a capital stock of \$40,000. The directors of the new company are J. L. Jackson, E. D. Church, R. K. Rosseguie, S. S. Roby and J. C. Reinke.

Another company to be incorporated is the Teegarden Brick & Tile Co., South Bend, Ind. Capital stock, \$20,000. The directors are W. B. Calvert, D. G. Miller, T. E. Kinzie, William Miller, W. C. Divine, Frank Johnson and N. L. Laver.

WESTERN NOTES.

The Hydraulic Pressed Brick Co. of Omaha are shipping gray brick for the new Normal building at Kearney, Nebraska.

The Ottawa Brick & Tile Co. was established eight years ago in what is known as North Kansas. Brick and tile are manufactured exclusively and the streets of Ottawa are paved for over twelve miles with vitrified brick from this plant. The plant has a daily capacity of 30,000 brick and from 15,000 to 18,000 tiles are made each day. A very commendable fact is that since the establishment of this plant, not one brick has been brought in from the outside for use in the construction of buildings or for the paving of streets in Ottawa. The company ships large quantities of brick all over the U. S. The tile has been pronounced by the Kansas State Agricultural College as among the best in the state. The company employs from 30 to 40 men. The officers are J. E. Byers, president; John Halleron, vice-president; F. B. Peck, secretary, and Fred Dobson, treasurer.

At a receiver's sale, the plant of the Parsons (Kans.) Vit. Brick Co. received only one bid, which was for \$5,000, and was rejected by the receiver. The plant will probably be reappraised and another sale advertised. According to invoices, the plant cost \$130,000, but was appraised at \$26,000, and according to the instructions of the court, must bring at least three-fourths of the appraised valuation, \$19,000, or the bid is to be rejected.

Mr. Geo. Stevens, engaged in the building material business at Kansas City, is contemplating the purchase of a brick plant at Noawata, Kans.

The Hugo Brick & Tile Co. has been incorporated at Hugo, Okla., with a capital of \$15,000. The incorporators are H. W. Williams, Frank Bowman, T. O. Nelson, J. J. Terry and John H. Brader, all of Hugo.

The Tyro (Kans.) Vitrified Brick Co. has been remembering its friends with very useful souvenir rulers. This company is actively engaged in the manufacture of vitrified brick, for which it finds a ready market.

BUCKEYE NEWS.

Columbus, O., July 26.—For the amount of energy being put into the business, some sales agencies report that orders are not as large as might be expected. Just now it is a continued hustle for business with some of the building brick manufacturers, and while there is more or less activity prevailing, there are always many bidders for each new piece of business.

Attorney James M. Butler, a master commissioner in the case, appointed by the United States Court, has sold to a reorganization committee of the Columbus & Hocking Coal & Iron Co., some real estate, stock and bonds of the Columbus & Hocking Clay & Brick Co., a subsidiary corporation for \$250,000.

At Oakwood, O., S. F. Holmes and M. E. Bidlack have formed a new company and will soon begin the manufacturing of tile, brick, block and ornamental ceramic work. The first building to be used will occupy a site 30 by 60 ft.

Ohio brick manufacturers who complained to the Interstate Commerce Commission against the rates charged for shipments of brick over the B. & O., C. & O., and the Southern roads went to Louisville, Ky., July 20, where evidence was taken.

Over 200 people are being employed at the remodeled plant of the Hocking Valley Products Co., at Greendale, near Columbus. Only one brick machine is now in use, but a second machine is being installed and will be ready for operation within a few days. Orders with this company are very encouraging, and with a capacity of 175,000 brick per day, the company expects to be working to the limit ere another month closes.

Stockholders of the South Webster (O.) Brick Co., at a recent meeting decided to place their property on the active list after an idleness of about three months.

With a capacity of about 20,000 brick per day, the plant of the Heinisch-King Brick Co., at Damarin's station, near Portsmouth, O., is working full time. Orders are said to be plentiful.

The South Webster Brick Co., with offices at South Webster, O., has again resumed operations after a shut-down of three months. Business in that locality has improved and a large number of men will be put to work. H. M. Strong is the general manager of the plant.

The Kyoto Pottery Co. has been incorporated at Fredericksburg, O., for \$50,000 by Mr. N. Search.

Reports from Columbus, O., state that the brick manufacturing companies in that vicinity are doing an immense volume of business, far surpassing that of last year. They are loaded down with orders and running several months behind.

OUR EASTERN LETTER.

New York, July 24.—The revolutionizing process in common brick selling methods in this city has had an effect entirely different from that generally anticipated. Instead of beginning operations on July 1, as planned, the Greater New York Brick Co. did not inaugurate its new system until about the middle of July.

The most startling feature of the present situation is the fact that despite a remarkably heavy demand considering the volume of building operations moving, prices are at a winter level. The manufacturers report having worked off practically all their reserve supply and the new brick are coming into the market at prices paid for last year's product. The Hackensack and Raritan river markets are particularly lively, because of a widespread speculative building movement in Brooklyn, Jersey City, Newark, Paterson and smaller suburban communities. Into these markets more fireproofing material, such as block and floor slabs are going than in any other year in the history of that branch of the industry. The market is light for promenade tiles for roofs and the architectural terra cotta interests report a slight lull in business, but this could

probably be accounted for by the effects of very warm weather and the usual lull, early in the opening of the second half of the year.

The beginning of the second half of the current year shows conflicting feelings on the part of manufacturers. The ones that are in the Greater New York Brick Co. are full of anticipation and optimism. Your correspondent has not found a single manufacturer in the new combine who has not expressed himself as being positive and jubilant in the belief that the solution of a problem that has been a serious one to the clay industry in the Hudson river for decades, if not centuries, has been solved. The Independents, are those who have determined to see how the new system works before entering the combination but willing to be convinced and most of them are in a receptive mood. Their attitude, coupled with the fact that those not in the combination control enough of the district's output to safeguard the consumer against any radical action in the matter of prices, has had the beneficial effect of keeping the market calm and allaying fears that threatened for a time to upset the building movement just at a time when it was gaining a belated headway. One of their representatives made a statement in which he said that the unaffiliated companies in the Hudson district and in the New Jersey field supplemented by those in the Connecticut district, would be able to equalize any attempt to raise prices out of proportion to the demand.

When the architects and building companies in New York City heard that, they felt relieved, and the volume of building plans filed continued to show gratifying increases. This seemed to prove conclusively that the introduction of a new building material power in the New York construction field was not viewed with alarm. There have been various reports which have had a temporary disconcerting effect upon the market. One of these was that many of the plants along the Hudson river were to close down; another was that a process had been discovered by the promoters of the new company for making a combination clay and marl brick that would cost less to make but would not stand the compression that the other brick would bear. But the report which seemed to gain greatest circulation and credence was that in the formation of the Greater New York Brick Co. the Hudson River clay industries had played a master trump in the battle between concrete and burned clay.

Must the Concrete Interests Pay Tribute?

There is a little clause in the incorporation papers of the Greater New York Brick Co. reading something like this: that the company may buy and sell coal, "and other materials." The report that this opened the way for these interests to control the trap rock and crushed granite industries in the entire Metropolitan district brought the concrete interests to their feet.

An official of the Greater New York Brick Co. when asked regarding the truth of this story said:

"The brick situation is big enough for us to tackle for the present, and we will devote all our time and attention to that problem. There are all sorts of rumors afloat regarding the purposes of this company and most of them are not worthy of being seriously discussed. I will, however, say this: We are not trying to corner anything, nor do we now contemplate any inroads upon industries or businesses outside of those directly concerned with the manufacture of common brick and the sale of the by-products of the clay beds and properties."

The fact that there have been reports for a long time regarding the absorption of practically all the crushing plants in the district by a selling or holding company, gave a semblance of truth to the story. No one has been found who will positively affirm or deny it and so it is of more than passing interest to the clay interests in the East to note some of the conditions surrounding this commodity which may, at some future time, be a part of the Hudson river clay industry just as Portland cement is now a bi-product of the United States Steel Corporation, through the utilization of a waste product, slag.

Until the State of New York voted to accept the Harri-man gift of thousands of acres of land on the West bank of the Hudson river between the New Jersey state line and the city of Newburgh, N. Y., it was impossible to raise the necessary \$6,000,000 to take over all the plants in the district. For years quarries have been eating away the Palisades, a huge bank of fine granite cliff reaching

from Weehawken almost to Storm King, just south of Newburgh. The state is gradually buying in these plants. The Manhattan Trap Rock Co., the crushed stone department of the Barber Asphalt Co., was recently taken over by the state and others are being negotiated for now. With these, numbering twenty-nine put out of business, the output of crushed stone from the Hudson river will revert to practically a handful of companies just outside the ranges of this great park tract. The cost of haulage and towage to New York, under existing circumstances, will be prohibitive and this will leave the crushed stone field practically in the hands of Staten and Long Island quarries and to the company operating the Snake Hill quarries on the Newark meadows, just behind Hoboken and Jersey City.

The companies quarrying material above the Haverstraw line now "club" their tows. The quarry situated the farthest from New York tows to the next quarry lower down. The two scows then are towed to the quarries further down the stream and finally a tug takes the whole flotilla to market at a special rate. The towage from Staten and Long Island is within "lighterage limits," as lighterage can be easily moved about.

The Greater New York Brick Co. will probably operate its own towing line in time. There are dull periods in summer and most of the towboats are idle in winter. The new boats will be in a position to bring in tows in either season when navigation is open, cheaper than the hauling now costs. On light brick loads the company would be able to couple on a few stone scows and bring them all into the city at once.

Crushed stone, like common brick, has been going down in price within the last twenty years, with rare exceptions when there have been slight rallies. In 1880 all the stone was crushed by hand. Machinery has been introduced and this has enabled producers to cut prices at will until today the price is between 85 cents and 90 cents a cubic yard.

The plan is to get in line for some of the business that will accrue from the construction of the new subway systems. Clay interests would normally get comparatively little of this business. Probably not more than 27,000,000 brick will be used in the whole work. Large quantities of concrete will be used, however. It has not required much farsightedness to note that if a subsidiary company of the Greater New York Brick Co. could gain control of some of the largest crushed stone quarries in the Staten Island or Long Island district and also one or two of the bigger plants higher up the river the supply could be so pocketed that the clay interests would be in the position of reaping a tribute from their dearest rival, the concrete industry. Many Hudson river plants have large stone deposits.

About 18,700,000 tons, or 170,000,000 cubic yards of three-quarters inch sizes, or 130,000,000 cubic yards of one and one-half inch crushed stone will be used in this work. This represents in value about \$1,275,000 at the current price 75 cents delivered at job in large quantities on daily shipments covering more than a year.

It is argued that a gross business of \$1,275,000 in one year on an investment of \$3,000,000 and possibly less, with the future supply of crushed stone to New York so controlled as to prevent an over-supply, is a good business proposition and this has served to attract the attention of promoters of the new company to the possibilities of this field.

Latest Details of Brick Combine.

The attitude of building material dealers and others toward the Greater New York Brick Co. is entirely different from that anticipated. While there is a great deal of speculation by those on the outside regarding the plans of those on the inside, the feeling in the entire trade is one of conciliation. The diplomatic work of the new combine is in the hands of masters in this art and hostile companies are being made the recipients of every courtesy. Whether they come in or stay out is entirely optional. As far as can be learned no one has been coerced. The whole matter is being met with a spirit of fair play and even the dealers who were at first hostile and were for strengthening their organization so as to protect themselves against any inflation of prices, are ready and willing to wait and see what happens. They have committees ready to act at once, if necessary, but so far there

has been no need of it. Some of the dealers themselves have been invited to confer with the new company.

This statement was given out by one of the officers of the new company and it probably settled more doubts and questionings regarding the purpose of the company than any other one thing. It follows:

"The building interests have nothing to fear from the introduction of new selling methods in the common brick industry. If they believe that prices are going to jump immediately to prohibitive or extortionate heights their suspicions are unfounded. Nothing of the kind will be attempted if our present plans go through, and we now believe they will be successful."

"The new system of selling brick in this market will redound to the benefit of both the manufacturer and consumer. As far as the dealer is concerned, he will find very little difference over former conditions, except that he will be indirectly benefitted by the savings we can effect in the wholesale handling of this commodity.

"We are working on a basis of fair play. There is absolutely nothing to conceal. We are not a trust or a combination of plants under one holding company. This is merely an organization of manufacturers, whose membership is accompanied by the payment of membership dues, based upon pro rata production or machine capacity. This, we might say, is merely for the purpose of giving joint authority to the new company for purchasing of supplies and for the confirmation of any orders for coal and other raw materials which the Greater New York Brick Co. will give from time to time. While it is true that we have received an offer from one interest to install a cost-reducing and labor-saving device for the handling of brick in sheds at the yards, we have not closed with him and no formal action has so far been taken in this matter, so that disproves the rumor that the Greater New York Brick Co. is the nucleus of another and larger future company that will assume the proportions of the Chicago Brick Co. or so-called Illinois brick trust. Indeed it is doubtful if the subject will again be taken up."

THE WINDY CITY.

Chicago, July 25.—Ordinarily the very warm and depressing weather would have caused a decided slump here in the brick demand. However, this year has been an exception, from the fact that the brick strike in the earlier part of the year delayed matters so much that it will require some weeks yet to catch up with the orders. The yards are empty. It is not possible to accumulate any surplus stock of building brick now, as the demand has been in advance of the supply since the plants resumed operations some weeks ago.

While the permits do not show any material increase and it is expected that there will be a decrease from this time on in the amount of local building, the building brick men anticipate no material decrease in the demand for brick for a time yet. The plants are not operating more than the regular hours, as the cost of so doing would be too great. However, they are doing all that is possible to meet the demands being made upon them and are operating to their full capacity.

It must be remembered that practically all during the past winter the plants were kept in operation to meet the demands for brick. This was an unusual proceeding, and one that did not permit any great accumulation of surplus stock on the yards. With the spring demand and the strike following there was little reserve stock on hand. The march of building progress continued as best it could and the settlement of the strike left a condition that was far from being an enviable one. To meet and satisfy all the urgent calls that have been made upon the manufacturers has been a trying task, but there is daylight ahead now and the brick manufacturers are breathing more freely than they have in weeks.

The price of building brick continues the same as it has been in the past and there does not appear to be any likelihood of any material change soon. Face brick, terra cotta, sewer pipe and fire brick average about the same prices with a very fair business reported in most lines. Some of the buildings planned in the early part of the year were postponed until next year, due to the strike.

The plants are humming merrily along and the large amounts of brick and other clay commodities that are

being turned out give a most pleasing indication that there will still be ample to do when the sun has cooled some.

The addition to the plant of the Northwestern Terra Cotta Co., is nearing completion now. The strike at the brick plants delayed this for some months, but the plant will soon be ready for use. It has been erected with the latest ideas of fire resistance, and much terra cotta and brick enter into its composition. Business is reported at this plant to be holding up well.

Bonner & Marshall Co. have secured a large contract at Dallas, Tex., for face brick for a 20-story hotel. These will be of the Oriental type. The company has found business good in the past, while at present there has been a decline, the fall prospects seem to offer a very nice business in face brick lines. It will in all probability be dull for a month or so now.

The McRoy Clay Works state that the demand for conduit has been brisk during the season. A number of nice contracts have been keeping them busy this summer and there has been no reason to feel other than pleased with the way the situation looks now.

The Chicago Retort & Fire Brick Co. keep hard at it these warm days. Business is such as to make them well pleased with what has been done in the past and the future is always bright with this large concern. There is no cause for any complaint on its part.

The Jenkins & Reynolds Co. is doing the usual summer business. Mr. White has found the demand for face brick in the past to be good enough to keep the business moving along in a nice way. Everything now offers as pleasing a prospect as one could hope for.

The Illinois Terra Cotta Lumber Co. has had enough to keep it busy in fireproofing in the past few months. The local strike did not seriously interfere with its operations on fireproofing as the orders were in such localities as to make little difference. The future offers pleasing prospects for the industry.

Mr. Cormack, of the Wisconsin Lime & Cement Co., says the situation is fair with the company. Face brick has been in fair demand only, though there has been enough to keep things moving. He does not look for any great increase in the demand for at least a month or so longer.

The Carey Brick Co. is operating at full capacity. The call for building brick has been steady and the demand has thus far been in excess of the supply. However, there appears to be some relief in sight now, and it is more than likely that within a few weeks there will be a decline in the demand, making it possible for them to catch up with the rush orders.

The Curtis Brick Co. has been incorporated here to manufacture and deal in brick, tile, terra cotta, etc. The incorporators are: Edward C. Curtis, Vernon B. Curtis and Ernest B. Griffen. The capital stock of the company is \$500,000. The plant will be located at Grant Park, Ill.

The Wisconsin Lime and Cement Co. and the Thomas Moulding Co., have each purchased fourteen lots at Peoria, Green and Seventy-fifth streets. Each parcel has a frontage of 531 feet and a depth of 124½ feet. It is said that there will be no immediate improvement made on the property, but that the lots will be held for future needs for storage yards.

NEW ENGLAND NOTES.

Berlin, Conn., July 26.—June made a new high building record. The value of building contracts awarded in New England, during the month of June, made a new top-notch record, the total being \$19,703,000, an increase of nearly \$4,500,000 over the same month last year and the highest figure ever recorded for June, according to the statistics compiled by the F. W. Dodge Co., of Boston, Mass.

The demand for brick has very materially increased throughout New England. Business is booming in Bangor, Me., where the big fire presented an opportunity for business to the brick manufacturers in that section. In Massachusetts, Rhode Island and Connecticut the price on common brick has advanced 25 cents a thousand and the present outlook is for \$6.00 brick by fall.

Fire destroyed 200 feet of the shed belonging to the

C. P. Merwin Brick Co., Berlin, Conn. The company was fully protected by insurance.

The North Adams Brick Co., North Adams, Mass., expects to make 5,000,000 brick this year. The company reports a good demand in western Massachusetts for common brick.

The following financial statement of the Westfield, Mass., Brick Co. shows that "good will" is worth good money in the East:

WESTFIELD BRICK CO., WESTFIELD.

Assets.	
Real estate	\$ 25,000
Machinery	7,400
Cash and debts receivable	930
Manufactures and merchandise	13,750
Good will	66,000
Total	\$113,080
Liabilities.	
Capital	\$ 80,000
Accounts payable	1,840
Floating debt	29,180
Profit and loss	2,060
Total	\$113,080

The Crown Brick Co., of Berlin, Conn., is the new name of the Jacobs Brick Co., which gives out the following information. A reorganization and change of name of the latter company went into effect a short time ago and the new Board of Directors have elected the following officers: Frank J. Knox of Hartford, president and general manager; W. R. Beckerly of Hartford, treasurer; W. H. R. DuBois of Bridgeport, secretary and general sales agent. The past winter has been a busy one at the plant in Berlin. Extensive alterations and improvements have been made, new buildings have been erected, new machinery installed and considerable money has been spent to put the plant in the best possible condition. The company is now turning out a product that is the equal of any on the market and will have an annual production of 12,000,000 brick. At Bridgeport a retail and storage yard of considerable extent has been established to supply the local trade at that point, and similar yards will be established at New Haven and Hartford in the near future. The directors of the company are already making plans to double the capacity of the plant before the end of the season and with its unexcelled facilities for handling its product and its recently installed system of drying by steam the operation of the plant will be carried on throughout the winter. The word "Crown" will be stamped on all brick manufactured by this company. The facilities for shipping are excellent and its patrons will be assured of prompt service.

Mr. Shedd, the generous donor of the public park at Lowell, Mass., proposes to build a vitrified brick flagging from Nesmith street to the Knapp avenue entrance to the park.

John Raitt, the well known brick manufacturer of Eliot, Me., takes exception to an article recently published to the effect that the kiln of brick burned by Elbridge Gage was a record, as being the earliest in the season. Mr. Raitt says that on May 29, 1894 he set fire to a kiln of 275,000 brick at his yard in Eliot and has since been waiting for some one to break the record. According to the statement of Mr. Raitt, he has Mr. Gage beaten by several days.

The following corporation statement has been filed: North Adams (Mass.) Brick Co., by Valmore A. Whitaker, treasurer. Real estate valued at \$35,870 and machinery at \$3,450; cash and debts receivable, \$11,350; manufactures and merchandise, \$4,197. Total, \$54,876. Capital, \$5,000; accounts payable, \$1,785; funded debt, \$37,500; floating debt, \$6,800; profit and loss, \$3,791. Total, \$54,876.

According to the "Boston Com. Bulletin," manufacturers continue to report a very fairly satisfactory market for brick, and speak of the tone as steady.

The Clay Products Co. has been incorporated at Jersey City with a capital stock of \$2,000,000 for the purpose of manufacturing fireproofing materials, clay products, etc. The incorporators are T. F. Gregg and N. H. Raymond, of New York City, and F. P. McDermott, of Jersey City.

Eldridge Gage is doing a rushing business at his three brickyards at Dover Point, N. H. He has completed the burning of his second kiln of 300,000 brick and the third kiln is now ready for burning. The brick have all been

contracted for and will be shipped as soon as barges can be obtained to carry them to his customers.

Orris E. Stoddard, New Brunswick, N. J., recently bought at sheriff's sale the property of the Stegmayer Enameled Brick Co., located in Sayreville Township, which has been foreclosed by him for \$1.00. The decree and costs amounted to \$9,875.35. It was the second time Stoddard had foreclosed on this property. He had secured it from the holders of the title in that manner, only to find that the Stegmayer Co. had a lease on it.

BIG NOISE ON PUGET SOUND.

The Puget Sound clay men are a merry and congenial "lunch" and frequently take a day's outing together to enjoy the beauties of nature and other good things.

We received the following letter from one of the merry makers, which shows the "effete Easterners" how the "wild and wooly westerners" enjoy life:

Editor of "Brick and Clay Record":

Well, the Seattle brickmakers had their picnic and excursion, and it certainly was an eminently successful affair. The weather was delightful. The boat on which it was held was an 82-ft. launch, with a speed of 15 miles per hour, which Mr. Robert Niedergesaess, manager of the Seattle Brick & Tile Co. generously furnished for this occasion. It was the cynosure of all eyes, behaved beautifully and was splendidly handled by Mr. Niedergesaess and Wilhelm, his son.

Another thing that created a great deal of interest and merriment was the notification each member received before starting. It was as follows: "Any member mentioning brick or any clay product during the entire trip will be subject to a fine of \$5.00." We would recommend this system to all clayworkers when they go on a picnic, as it certainly is the most efficacious method of curtailing shop talk that was ever devised. Every one in the party was fined with the exception of Cecil Ridge, manager of the Lake Union Brick Co. He is an experienced department store man, and had the bulge on us, for he could ask, "How many yards do you want," as often as he pleased without endangering his pocket book or its contents.

The day was beautiful and clear. All the mountains were visible, and certainly formed a great back ground for picturesque Puget Sound, on which the beautiful boat sped along like an arrow.

The luncheon which was furnished by the brickmakers was very select and ample.

The firms represented were as follows: Builders Brick Co., 2; Denny-Renton Clay & Coal Co., 1; Hill Brick Co., 2; Lohse Brick Co., 1; Pontiac Brick & Tile Co., 2; Seattle Brick & Tile Co., 5; Ballard Brick Co., 1; Lake Union Brick Co., 1, and Washington Brick & Tile Co., 2.

The Abrahamson, Harper-Hill and Queen Brick & Lime companies were so busy filling large orders that would probably aggregate 10,000 brick that they could not possibly attend. These degenerates would rather sell brick any old time than catch the beautiful salmon trout, which Puget Sound is famous for. Those who think that brickmakers have no soles let them forever banish this thought from their minds. We caught 150 on this trip, besides a large basket of salmon trout, and Arthur Houlahan caught the prize fish of the day's sport, a magnificent steelhead salmon trout weighing 6 lb. Wilhelm Niedergesaess caught a large skate which took four of us to land. It was then killed and sent adrift as it was of no use.

A. W. Dimmock is the name of the new manager of the Little Falls Fire Clay Co. This company has had its troubles, but expects to have a first-class paver on the market by the first of September. A. Bonnot passed through here in the interest of the Taplin, Rice-Clerkin Co.; I did not hear that he made any sales. J. K. Sawyer, of Los Angeles, is building two down-draft kilns and stacks for same, for the Builders Brick Co. The Denny-Renton Clay & Coal Co. is installing a new engine and boiler at their Van Asselt terra cotta plant. On Saturday, July 22d, the Builders Brick Co. had a fire at their plant at South Seattle, but it was checked before it got very much headway by the prompt action of the fire department, the loss was probably \$400. Mr. King has tendered his resignation as superintendent of the Lake Union Brick Co.'s plant. We understand that he is going back with the Washington Brick & Lime Co., of Spokane.

KANSAS.

Work has been started by Messrs. Smith and Todd, contractors, on the brick work for the Jefferson Hotel, Independence, Kan.

The old Caney brick plant, Caney, Kan., shut down for about ten days during June for the purpose of installing a fine new machine. They had been contemplating this step for some time, but had postponed it until that time owing to the large amount of work on hand.

The Brick & Tile Works, Columbus, Kan., are in good shape and the new machinery is working fine. They have orders in sight sufficient to keep the plant busy for about 60 days.

The Wichita (Kan.) office of the Kansas Buff Brick Co. recently secured contracts to supply brick for two new city high schools at Arkansas City and El Dorado. The Arkansas City high school will be a \$35,000 structure and will require 90,000 face brick in its construction. The contract for the El Dorado school building was let for \$20,000.

Under the ownership of W. C. Gunn the brick plant at Fort Scott has been reorganized under the name of the Fort Scott Brick & Tile Co., and vast improvements are going on there in conjunction with the operation of the plant, which is in charge of D. P. Thomas, general manager, and Kenneth Calhoun, president of the company. The improvements now under way are costing between \$25,000 and \$30,000; and when completed this plant will be one of the largest and most modern this side of the Mississippi river.

THE SUNNY SOUTHLAND.

Birmingham, Ala.—F. E. Ladd and Charlie Birchy, Fort Payne, Ala., doing business as the Ladd-Birchy Brick Co., have filed suit in the circuit court against the Bradstreet Co., Birmingham, asking for \$30,000 damages, on the grounds that the defendant issued a libelous statement or report concerning them, which impaired their business standing and credit.

It is reported that J. B. Elliot, civil engineer, Leeds, Ala., known widely as "The Duke of Leeds," who plotted the right of way for the Frisco System's entrance into Birmingham years ago, and E. M. Tutwiler are forming a company at Leeds, for the purpose of manufacturing brick.

The Sheffield (Ala.) Casting & Manufacturing Co., has resumed operations after a long shut-down lasting several months. Under the management of W. G. W. Gillen, the plant will be run at full capacity. This plant is regarded as one of Sheffield's best, and there is universal joy at the resumption of activities.

There is a slight improvement in business at Birmingham in the past week or two. The great number of buildings now in the course of construction, upon which work has just been started, holds promise of great activity among brick manufacturers in the near future. The majority of small brick buildings going up is increasing steadily, and while business at the present time is not as good as it might be, still there is enough doing for all to get a good share.

Tennessee.

Nashville, Tenn.—Work for the brickmakers continues to be exceedingly good, there having been absolutely no let-up in the demand for the product. The market is in a most flourishing condition and permits for brick houses are being issued with increasing regularity. As an example of the activity in the building brick lines, Building Inspector Laurent issued permits for brick schools, residences and apartment houses to the amount of \$25,000 on Monday, June 19th, which is a little above the average for one day.

An addition, 100 by 42 ft., of brick and stone is to be made to the Union Station here.

A modern brick building is being erected on the corner of Third Ave. and Deaderick St., which will be divided into three stores, of three stories each. Elevators and other modern conveniences will be installed.

A \$14,000 brick church with stone foundation is to be erected by the congregation of the Seventh Baptist

Church, and a number of other brick buildings to be erected, makes business brisk for brick manufacturers.

The Fulcher Brick Co., will furnish the brick to be used in the flat of Dr. J. O. Kilpatrick, now being built by him, and the double brick tenement being built by B. J. Slaughter, Jr.

Centerville, Tenn., is soon to have an entire block of modern brick business stores. Various business enterprises have already made contracts to occupy the new brick buildings.

CANADIAN BRICK INDUSTRY.

The name of Anton Berg has become a household word in Canada, in connection with the brick industry. We are pleased to publish a portion of some observations by Mr. Berg, on the future of the brick industry in Canada, which we gleaned from the Contract Record. He says:

"The brick industry in Canada is of infinite importance, and today it is conceived to be on a sound basis. The resources in this line are immeasurable; material for first-class brick of all kinds is plentiful, and in this country is manufactured the very best machinery and equipment for various kinds of brick-making. Men of ability, with capital, have been taking hold of this business and continue to promote the welfare of this industry. Such men I have found in this connection are precautions. For instance, they have made special trips across the line to look into the industry thoroughly, and to note the buildings and structures, material, etc. Hence they select unhesitatingly that which is best for themselves and the future generations of this peerless Dominion of ours. This industry is related closely to that of building and structural work, and for such an important combination it is necessary to study the future. Stepping back for a moment across the border, and viewing the brick produced, we must confess that while some are of the very best, there are many to the contrary. So-called brick are produced which are neither fit nor safe to put into high office structures, disregarding the claims of future generations. Such material, which is widely used, in spite of its short duration of usefulness, will deteriorate and go back to dust, from which state it should never have been taken.

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BRICK

AND CLAY RECORD

VOL. XXXIX
No. 4.

CHICAGO, AUGUST 15, 1911

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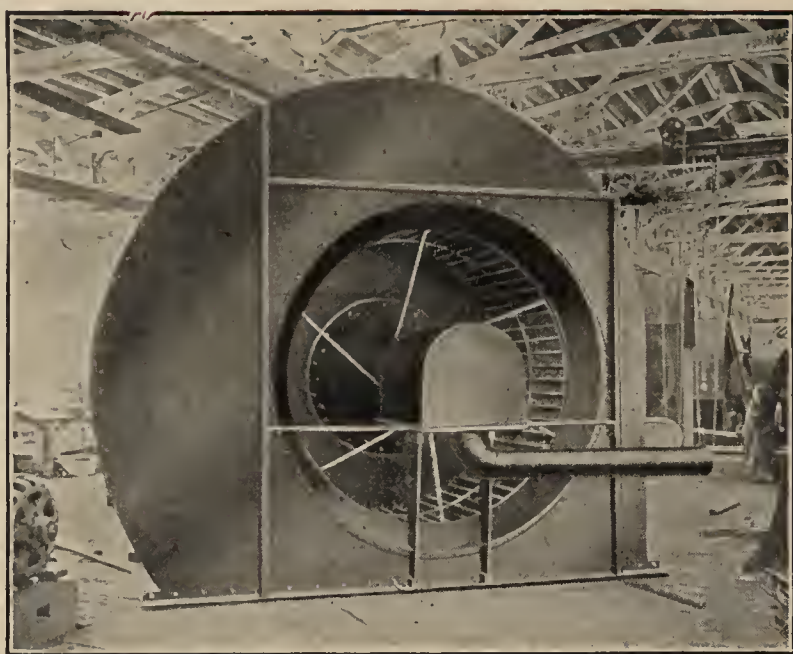
Table of Contents

Page	Page
Plant of Chicago Sewer Pipe Co., Brazil, Ind.Frontispiece	Plant of Cannelton Sewer Pipe Co.... 137
Drainage in Eastern England. By C. G. Elliott .....119-122	Good Drain Tile Talk—Conditions in the Trade 138
Laying Drain Tile. By Ellis Lovejoy, E. M. ....123-124	Van Wie Interlocking Drain Tile—Tile Notes 139
Reclamation of River Bottom Lands. By John J. Harman, M. E.....125-127	Clay Industry in Canada—Production of Fuller's Earth 140
Rockford (Ia.) Brick & Tile Co's. Plant.128-129	Superintendent's Department—Employer's Duty in Mining Clay, Etc..... 141
Death of Samuel Stevenson..... 130	Paving Brick Industry—Legal Decision as to Testing..... 142
Tile Drainage Benefits. By C. B. Platt..131-132	Sewer Pipe News.....143-144
Genoa Brick & Tile Co..... 132	Sand Lime Department..... 145
Laying of Drain Tile. By A. T. Greaves-Walker .....133-134	Pottery News .....146-147
The Straight Plant..... 134	Some Up-to-Date Generators.....148-149
National Drain Tile Co..... 135	Recent Inventions 150
Prosperity Reigns—Important Consolidation 136	Trade Review—Letters from Distant Points151-156

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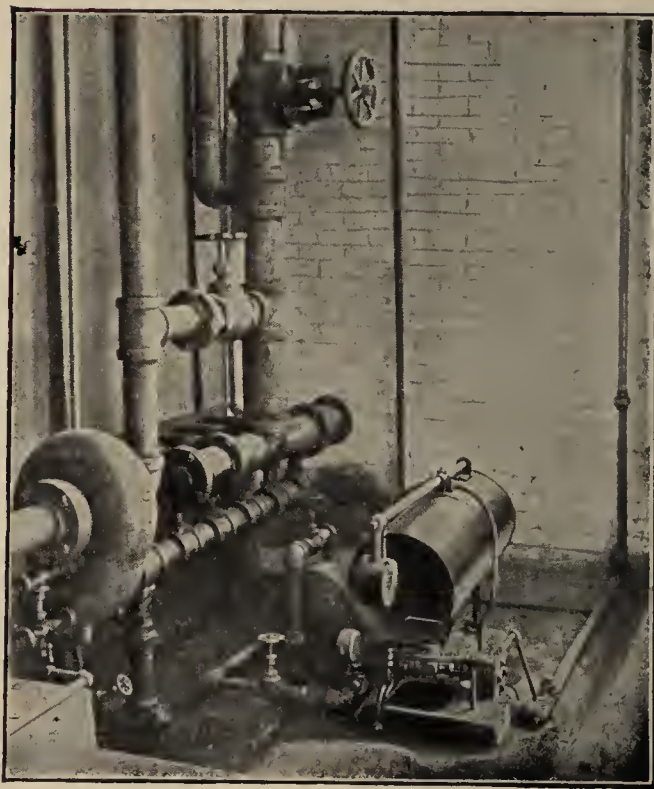
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VOL. XXXIX—No. 4

BRICK

AND CLAY RECORD



AUGUST 15, 1911

DRAINAGE IN EASTERN ENGLAND

**Comparison of English and American Drainage Methods, Giving Results of Observations
Made by C. G. Elliott, C. E. Chief of Drainage Investigations, U. S. Department of Agriculture, During a Trip Abroad in 1908**

The success of English land drainers and engineers in bettering the conditions of estates and in reclaiming marshes, during the first half of the last century gave no little impetus to land drainage in the United States. While we are indebted to England for our first lessons in this useful art and freely copied the methods which had proved satisfactory in that country, we have found it expedient in our practice to deviate from them in many particulars on account of differences in climate, soil, and industrial conditions. Some of these departures are due to requirements peculiar to the development of a comparatively new country, and are the natural results of the enterprise of American farmers, which may be mentioned with pardonable pride, so that we now find ourselves viewing land drainage operations from a different standpoint, than the one we occupied a few years ago. It is instructive to study the successive steps by which wet lands have been made arable, the relation between individual and public drainage enterprises, and the methods, which after a hundred years, have come to be regarded as standard for the localities where they have been developed. It is here proposed to describe some features of drainage in Eastern England and to discuss them in connection with practice in this country, not omitting to keep in view the conditions which have controlled such work in both countries.

The Fens.

The fens, comprising about 732,000 acres of low land in Eastern England, have a world-wide notoriety by reason of the labor and money which have been expended in reclaiming them. They have been changed from marshes and all that the name signifies into productive fields. The cost of this reclamation has been greater than any other of which we have knowledge. This, however, has been due not so much to the magnitude and difficulties of the work, though these were formidable enough, as to the manner in which the reclamation was accomplished.

The Romans controlled the land from 55 B. C. to 420 A. D., during which time they reclaimed parts of the fen-land by banks, 150 miles of which remain as evidence of their untiring efforts to avail themselves of the fertility of this great delta. The "Roman banks" are still prominent features of the country, the location of many of them being shown on the ordnance maps.

Active modern reclamation work may be said to have begun about the year 1600, though no little effort had been made in that direction by the monks and abbots for four hundred years previous to that date. Though the history of the various works is scattered through a multitude of documents, the evidence, at hand, shows that the reclamation of the fens has been attended by countless failures,

has been vigorously opposed by those who insisted on having the lands remain in their original state, and has cost an amount of money which it is impossible to correctly estimate. A few historical items, recorded by Wheeler, will be both instructive and encouraging to those who have attempted to promote the drainage of waste lands in this country. In a pamphlet, printed in 1606, it was said that the fens were the nurseries and seminaries of fish and fowl which would be destroyed by drainage; that the sedge, turf, and reed would likewise be destroyed, and that many thousands of people gained their livelihood by fishing and fowling in the fens, while the turf furnished fuel for the poor. The answer to this arraignment was that a tame sheep was better than a wild duck, and a good fat ox than a well-grown eel; that the sedge would be replaced by good grain and grass, and that a man, would not have cause to complain who had a suit of buckram taken from him and one of velvet given instead.

In addition to the opposition of the native fenmen, other agencies were brought to bear against the fen drainers. Satirical poems were composed and their cause was even advocated by men of learning and social standing. Fuller, in his history, speaks of the attempted inclosure of the fens as a trespass upon the divine prerogative for man to presume to give other bounds to the water than that which God had appointed, and he intimates that Providence had specially left this district for the production of fish and fowl and for the growth of sedge, turf, and reeds.

In several instances drainage works which had been constructed at great cost were destroyed by opposing fenmen, and land which had been brought into a productive condition went back to its original state. An example of such discouragements in the work of reclamation occurred in 1662, when the Earl of Lindsay and Sir William Killebrew were granted authority by the King to reclaim 22,000 acres of fen land, tributary to the Witham River above Boston, for which they were to receive 8,000 acres of the reclaimed land as their remuneration. This work was successfully done and the land became habitable. The malcontents, in contempt of law and order, destroyed the drains, buildings, and crops, and also the great sluice at Boston which had cost \$30 000. It does not appear that the "adventurers," as those who accomplished the drainage were called, could obtain any relief, and Sir William died forty years after making his petition to parliament for redress, a poor man, ruined by his undertaking. This work was not again begun until 1763, a hundred years afterward, the fen remaining subject to inundation by river water and tide. In all of the numerous reclamation pro-

cedures, where Parliament authorized certain enterprising men to drain land, no protection was afterwards given them in the possession of the property they acquired. The failure of the Crown to do this doubtless deferred the reclamation of these lands for a century or more.

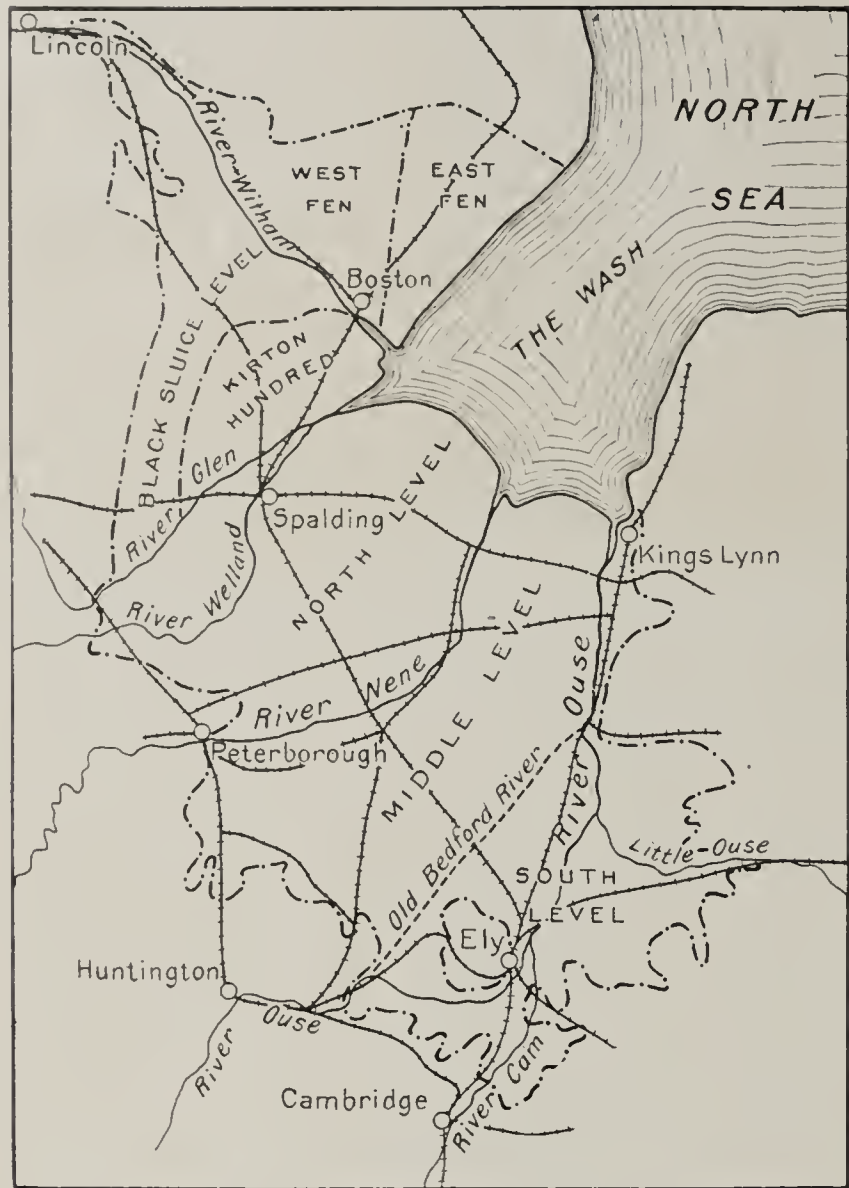


Fig. 1. Map of the Fen Area, Lincolnshire.

Rivers of the Fens.

The engineering problems to be met in draining the fens were of no mean order. This great level is a delta of four rivers of medium size which discharge into an arm of the North Sea called the Wash. (Fig. 1.). The rivers have their source in the high lands lying to the south and west, from which points they converge and finally discharge their waters into the sea within a coast distance of 20 miles. Their length and the area of their drainage basins are as follows:

River.	Length, Miles.	Area of Drainage Basin, Square Miles.
Witham.....	70	1,070
Welland.....	40	760
Nene.....	100	1,005
Great Ouse.....	140	2,605
Total.....	350	5,440

From 20 to 30 miles of the lower part of these streams pass through the level fens. In their original condition the channels were often lost in expanses of marshes which at times were inundated by the sea. The surface of the land lies for the most part from 2 to 6 feet below the level of the sea at springtide, some parts lying 6 to 12 feet below that level. Not only is the topography of these lands a controlling element, in their reclamation, but their physical structure and behavior under the touch of the agriculturist after draining are equally important. The entire fen lands rest upon a bed of boulder clay, which lies about 10 feet below "ordnance datum" (mean

sea level); upon this is a stratum of sand and above that a layer of peat which is usually encountered about 7 feet below datum. (Fig. 2). The balance of the formation is alluvium or silt, making a soil which varies from a light silt containing sand to a stiff clay. The clay soil resembles the black gumbo types of the alluvial regions of the United States, and when wet rolls up on the wheels of wagons which pass over the dirt roads. A surface peat is found covering many of the lower sections. About one-third of the fen land is classified as turf or peat, and is commonly called "the black lands." The peat has its origin, according to the geologist Skertchley, in the decay of sedges and grasses, no moss, of which the upland moors are so largely composed, being found.

Kind of Drainage Works Required.

Works of four different kinds have been required in reclaiming the fens. They are: Protection from the tides of the North Sea; protection from the water brought by the rivers from the hill country; protection from the seep water which comes from the lands bordering the fens and removal of surplus rainfall which comes direct upon the land.

The coast is subject to irregular and extreme tides which have caused great ruin at times because the protecting banks were too low. The banks are now sufficiently high and strong to resist the waves, but it is surprising that the narrow margin of safety, now provided, was not adopted a century ago. The wide fluctuations of wind tides from which the coast must be protected are shown in the following tabulated data given by Mr. Wheeler.*

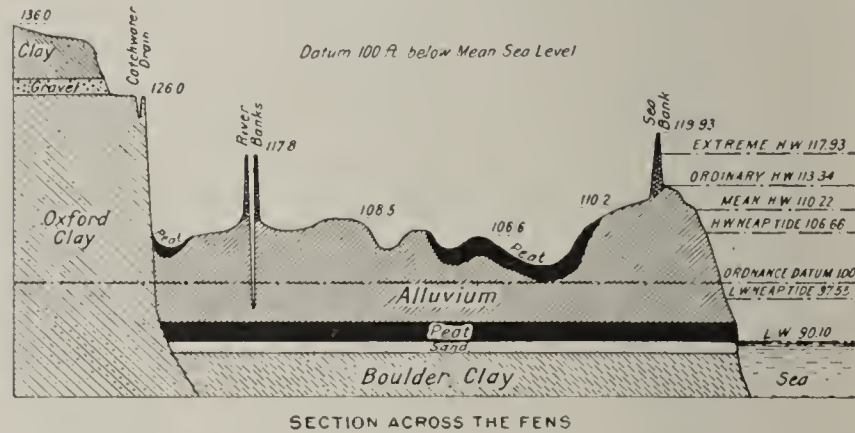
Tide Levels at Boston.

(Datum 100 = mean sea level at Liverpool).	
Low water, spring tides.....	90.10 ft.
Low water, neap tides.....	97.53 ft.
High water, mean tide.....	110.22 ft.
High water, ordinary spring tides.....	113.34 ft.
High water, neap tides.....	106.66 ft.
Tide of 1810, extreme high water.....	117.93 ft.
Top of sea banks at Boston.....	119.93 ft.
Difference between high and low water.....	22.24 ft.
Difference between ordinary high and extreme high water (tide of 1810).....	4.59 ft.
Height of sea banks above extreme high water.....	2.0 ft.

*The Fens of South Lincolnshire, by W. H. Wheeler.

The record quoted by Mr. Wheeler shows that from 1791 to 1890 there were twenty-one tides whose elevation reached between 116.40 and 119.93, the interval between them in one instance being sixteen years.

The banks which now protect the fens embody the lessons learned from costly attempts to hold the sea at



bay ever since the island was abandoned by the Romans A. D. 490. The small and badly constructed banks of former times have given place to those which withstand the merciless assaults of the sea. The following is an epitome of present practice in constructing sea banks: The slope of the face next the sea is considered one of its principal sources of strength, and may become steeper

as the top of the bank is approached, a slope of 5 to 1 from the base to the level of mean high water, and then a slope of 3 to 1 to the top of the bank is used. If the bank is set upon land known as "half tide," a slope of 3 to 1 is considered ample. The slope on the land side is usually 1.5 to 1, as such a slope will permit the bank to maintain a permanent sod.

The four rivers which traverse the level have been straightened and embanked and discharge their waters into the sea through sluices furnished with automatic gates. The sills or bottoms of the sluices are placed at the level of low tide and the gates close during a rising tide, preventing the sea water from flowing back into the rivers, and open as the tide recedes, permitting the river water to discharge itself into the sea. The sluices have up-stream gates which may be closed at will to retain a navigation stage of water in the river. In addition to the sluices there is a lock which will permit the passage of boats between the river channel and the sea. The sluices have always proved weak places in the protection of the lands and many disastrous failures of these struc-



Fig. 3. Automatic Sluice Gates at the Outlet of a Lode.

tures are recorded, mainly because of insecure foundations.

The channels of the rivers have high and strong banks and receive the drainage from both hill and fen lands. Water which is shed from the lands which border the fens is collected in catchwater drains, which are ditches 30 or 40 feet wide located at the base of the slope. The water collected by these ditches is taken across the level to the rivers by special ditches called "lodes." They occupy a level above the surface of the fens and serve only as conduits for hill water, and are of use for interior navigation, affording a convenient means for removing produce or bringing supplies from the large towns. The lodes occupy a unique and important position in the fen drainage system in that they carry "live water" direct from the base of the hills to the river and discharge it through a sluice, with automatic gate at the lower end (Fig. 3), and a sliding hand-operated gate at the upper end, the latter being used to retain the water in the lode at any desired level (Fig. 4). The supply, which is almost perennial, is utilized in dry seasons for irrigation to the extent of raising the level of the water in the lateral drainage ditches and so preventing the soils, especially those of a peaty character, from drying out. The water is taken from the lodes by means of pipes furnished with valves which are opened or closed at the will of the farmer,

who can use the water, provided the permission of the commissioners is first obtained.

Seepage from the Chalk Lands.

The continuous and regular supply of water in the lodes is due to the peculiar chalk formation which borders



Fig. 4. Lift Gate at Outlet of Drain.

the fens, particularly on the south. These lands, which lie 50 to 75 feet above sea level, are undulating and of a beautiful appearance. The soil is a dark loam only about a foot deep, but is underlaid by a cretaceous formation of nearly pure calcium carbonate 100 feet or more deep. This substance is so porous that it absorbs all surplus soil-water direct and in time delivers it at the base of the slope, where it is intercepted by the catchwater drains, or forms a marsh or bog in case no drain is provided. The surface depressions or draws carry no water except during times of more than ordinary precipitation. These are probably the best-drained lands known and are fairly fertile. While the chalk is porous it retains moisture in sufficient quantities to prevent serious drought of the soil, and prevents loss of fertility by surface washing. This peculiar and valuable property is noticed on the lands of the chalk formation in France, where the planting and cultivating upon the hillsides is done year after year, up and down the slopes without the fields being injured by erosion.

The presence of this formation, so characteristic of



Fig. 5. Lateral Ditch in the Fens.

Eastern England, greatly simplifies the work required for the drainage of the fens. While it is said that during the winter the catchwater drains and the lodes are sometimes overcharged, the flow is usually so uniform that it passes to the rivers without often endangering the low lands.

In this connection it is proper to call attention to the

effect which the environment of marsh land has upon the kind and cost of the works which are required to accomplish its drainage. Were the lands which skirt the fens clay or loam which would absorb rainfall slowly, the runoff upon the low lands would be two or three times greater during rainy seasons than it now is, but little at other times, and as a result ditches and pumps of greater capacity would be required. The catchwater drains, instead of receiving the water as they now do from the high lands as seepage, devoid of sediment, would receive water laden with eroded soil, which would lodge in the ditches and entail a large yearly expense for maintenance.

Drainage Commissions.

The works which have been described, though essential, are only protective and preliminary to the final drainage of the land which is required to make it fit for agriculture. The lands are divided into a large number of districts, each having its own commission for maintaining the



Fig. 6. Pumping Station, Built of Brick, in the Fens.

works which are of general service, namely, the lodes, the main drainage ditches, the sluices, and the pumps. The districts vary from 2,000 to 35,000 acres in size and bear local names, such as Swaffam Fen, Burwell Fen, etc.

Three distinct commissions are required to keep the works of the entire fen land in perfect condition. The outfall commission has charge of the sea banks and of the tidal rivers into which drainage is discharged. The drainage and navigation commission, consisting of seven members, has charge of and maintains the navigable rivers into which drainage is delivered. The several drainage districts are entitled to representation in the election of this commission. The district drainage commission has charge of the pumping, the maintenance of pumping stations, main ditches, the lodes, and the navigation upon them. The districts pay an acreage tax to each of these commissions for the maintenance of the works over which they have direct supervision.

With the work systematized in this manner, the drainage of the farms and fields in each district can be accomplished by works which effect the land direct. Each district has one or more main drains which receive the water from the entire area and bring it to a river or arterial canal, where it is discharged through a sluice with gate if the land is too low to permit a free gravity discharge. The main drains are 15 to 30 feet wide on the bottom and 6 or 7 feet deep. The laterals are about 4 feet and the field drains 3.5 feet deep in the peat or black lands. (Fig. 5.) These drains divide the land into lots of 5 to 10 acres, depending on the length of each, and these are supplemented by such field furrows as are found necessary to complete the drainage. The peat lands have shrunk so

much since their reclamation that they can no longer be drained by gravity. For this reason pumps have been installed and are relied upon to remove all of the drainage water.

Drainage by Pumps.

Since drainage by pumps is now coming into use in this country any details of experience in the fens may suggest some points that may be helpful here. Prominent among these requisites may be first noted the "basin" or reservoir capacity which is furnished by ditches of all classes. The theory of draining by pumps is that the rainfall which must finally be removed should pass from the fields into ditches and there be retained until it can be removed by the pumps. Since the introduction of steam power the proper basin area recognized by engineers is one-twentieth of the surface, that is, 1 acre in 20 is required for ditches. Since the introduction of the centrifugal pump it has been possible to reduce this area to about one-thirtieth, or 1 acre in 30. The completeness of the drainage is considerably dependent upon the storage capacity of the ditches, since they equalize the flow to the pumps, as well as act as storage reservoirs.

Another requirement is that the ditches be nearly level, a condition not sought in gravity drainage. A fall of 2 inches per mile is considered sufficient for main ditches. The efficient action of the pumps in draining the fields requires that the water be lowered uniformly in all of the ditches, much as a reservoir would be emptied, the movement from the smaller into the larger ditches being only sufficient to keep the pit at the pump full. All ditches must be kept clean and free of vegetation. Laxness on the part of farmers and district commissioners, in this regard, is followed by flooded lands at the first wet season because of the retardation of the flow in the ditches toward the pumps. Nothing more forcibly calls the attention of commissioners to the effect which growing vegetation in ditches has upon their carrying capacity than such floodings. So well is this now understood, that farmers, as well as commissioners mow the ditch banks closely and remove all debris from the channel during July and August of each year.

The pump houses are conspicuous features of the fen landscape (Fig. 6). They are built of brick, as are all of the structures required for sluices, gates and locks.

(Continued in Next Issue)

READY TO GET READY.

The plans for the coming Clay Products Show to be held in the Coliseum, Chicago, next March, are now well under way. During the past ten days many thousand copies of the prospectus of the exposition have been distributed throughout the country. This for the first time places before the clay products manufacturers full details of the exposition plans.

This prospectus is a very elaborate specimen of the printers' art and does credit to the exposition idea. Its front cover is a beautifully colored design, classical in its suggestion, having in the foreground an ancient Egyptian kiln, showing the foundation of the clay products business, the smoke issuing from this kiln arising in a cloud developing the exposition idea. The book contains pictures of the Coliseum, and samples of exhibits of clay products, also a plan of the Coliseum building.

There have already been made a considerable number of applications for floor space, and it is evident that there will be no difficulty in filling the Coliseum with a creditable Clay Products Show.

Those who desire floor space are urged to make application at an early date.

DRYING DRAIN TILE

By Ellis Lovejoy, E. M.

Many drain tile, as well as brick plants, have no well established system of drying. On summer yards they are often dried in racks in open sheds, just as common brick are air-dried, except that the tile require better weather protection than brick. Where the clay is tender the drying sheds are inclosed on all sides, or perhaps arranged so that air can be admitted after the tile have reached a stage where the drying can be hastened.

Frequently, steam pipes are placed under the racks to hasten the later stages of the drying, or flues of tile, sewer pipe, or brick are laid in the ground under the racks, with furnaces at either end of each flue, and when the proper time comes, steam is turned into the pipes or fires started in the furnaces. The heating arrangements are usually crude and the air distribution unsatisfactory, but, withal, the capacity of the drying sheds can be greatly increased in this way.

Hot floors may be used over which the tile on movable racks are supported on stanchions, thus using lifting cars to convey the tile from machine to dry floor and thence to kilns, or an ordinary car system of handling may be employed.

Building the kilns within the dryer building, under the

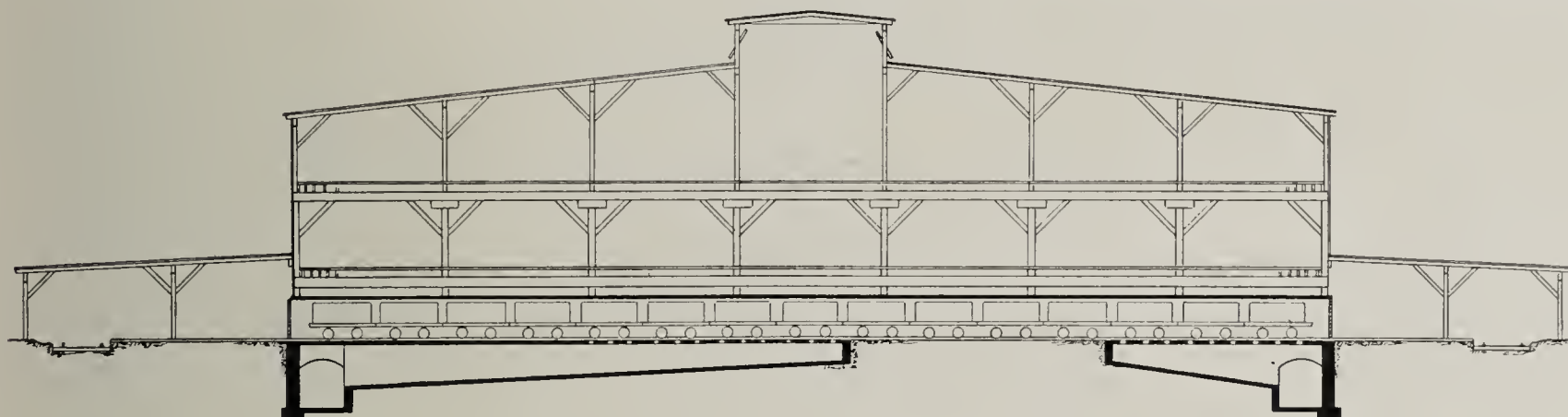
the total fuel is only from 200 to 400 lb. per thousand tile, the net returns are consequently small in comparison with the down-draft kiln, where we have a loss of 50 per cent or more in 600 to 1,000 lb. of fuel per thousand tile.

Modern tile plants use a tunnel dryer for small tile which can profitably be handled on cars from machine through dryer to kiln.

The tile are made by an auger machine placed on the ground floor convenient for the tunnel dryer. Drying floors for the larger sizes of tile are built over the tunnel dryer, and these tile are made on a steam press, or other vertical press, with delivery on the second floor, or perhaps on the third floor as one may favor elevation of the clay in preference to elevation of the tile. The press should be placed in an annex to avoid the heat of the floors.

Tunnel Dryer for Tile.

It is not our intention to discuss tile plant arrangement, at this time, but instead to briefly point out the features which should govern a tunnel dryer especially adapted to drying tile or other hollow ware, assuming that the clay will stand the rapid work of a tunnel dryer.



Plan for Dryer, drawn by Ellis Lovejoy, E. M.

drying floors, is favored by some and in fuel economy this method of using waste heat has merit.

Kilns Under Dry Floors.

Ordinarily, we use only the heat of cooling kilns for drying, which is hardly sufficient, but with the kilns under the dry floors we get all the kiln radiation losses, which, with the heat in cooling, amounts to over 50 per cent of the fuel used in burning. There are objections to combined kilns and dry floors, especially periodic kilns, which militate against extended adoption of this system. Some of these objections are as follows: Cramped and ill-lighted kiln room; insufficient space for coal storage, and the operations of setting, burning, and unloading kilns; irregularly distributed and uncontrolled heat supply; smoke and sulphur gases in the drying rooms from kiln furnaces and kiln leakage and danger from fire.

The continuous kiln placed under the drying floors has fewer objections. There is no smoke nuisance and little sulphur gas escaping.

The kiln requires a substantially constructed building, which may be raised one or two stories for dry floors. The danger of fire is very slight. The kiln being rectangular, the operation of it is from the sides and practically outside the building lines. On the other hand, the heat losses in a continuous kiln are small. Although the losses are about 30 per cent of the fuel used in burning, yet since

Tile or any hollow ware is more uniformly and safely dried by a vertical movement of the heated air, than by a horizontal movement along the axis of the tunnel such as prevails in the ordinary progressive tunnel.

In the horizontal movement, the hot air after rising through the first few cars at the hot delivery end of the tunnel, passes horizontally to the receiving end where it is drawn off into an overhead or underground exhaust duct.

The hot air tends to follow the roof of the tunnel and the tile are dried from the top downward more by convection than by actual air circulation. The top and sides of the exposed tile are dry first, and drying strains are introduced, which in tender drying clays result in excessive loss.

A periodic dryer, with the heating equipment under the tile, gives the vertical movement up through the tile, but in this short distance the air does not become saturated and we do not get full value from the heat. Much, however, may be said in favor of the periodic dryer for tile, regardless of its inefficiency in the tunnels. In the dry floors above we have need of heat and the partly saturated air gives just the conditions for drying large tile which must be carefully dried.

The progressive dryer, however, appeals to many of us as the better type of dryer. The principle, as is well known, is that of the continuous tunnel kiln which we

have been trying to perfect for so many years, in which the ware is traveling in one direction and the air for cooling, burning and drying, in the opposite direction.

In the progressive dryer the hot dry air first strikes the nearly dry tile and as it passes toward the exhaust end it becomes not only cooler but more and more saturated with moisture.

The tile, moving in the opposite direction, first come in contact with a comparatively cool, moist atmosphere and pass successively through the zones of hotter and drier air to the hot delivery end of the dryer.

Continuous Operation Desirable.

This principle is ideal, but oftentimes the dryers are not properly operated and losses occur which the user cannot understand. The proper operation is continuous, but many yards do not maintain this continuous operation. There should be receiving and cooling tracks outside the dryer and at night the receiving tracks should be full of cars of green ware, which during the night will be placed in the dryer as the dry cars are removed from the hot end, and in the morning the receiving tracks should be empty and the delivery tracks full.

Instead of this, many plants have everything made during the day and placed in the dryer, when the whistle blows.

During the night the heat and saturation zones in the dryer advance toward the receiving end and the first cars placed in the dryer, in the morning, get a hotter and drier atmosphere, but as the day's work progresses, the heat and saturation zones are driven back towards the delivery end. If the dryer is working on a twenty-four hour period, then a car placed in the dryer in the morning will reach the delivery (hot) end in ten hours, while the last car in the afternoon will be twenty-six hours reaching the same point. In semi-tender clays, this is often the cause of dryer losses.

A modification of the ordinary progressive dryer is desirable for hollow ware in order to avoid the horizontal air movement with its consequent irregular drying and to provide a heating-up section independent of the air circulation.

We need no change in the delivery end, where the air is brought in through a cross duct and distributed in lateral flues under the several tunnels about three car lengths, thence rising into the tunnels under the cars. The sources of heat are cooling kilns, exhaust or live steam in coils either outside the tunnels or in the lateral flues, auxiliary furnaces, etc.

Progressive Dryer.

To adapt the progressive dryer to tile, the exhaust ducts should be lateral from the main exhaust duct and should extend under the tunnels nearly the full length, considering, of course, the hot air lateral ducts.

In this way we can pull the air down through the tile and get uniform heat all around each tile. The number of points from which the air is drawn off depends entirely upon the clay.

The hot air entering at the delivery end of the dryer rises through the tile until it strikes the roof. It would not be wise to begin to pull this down immediately, even at the risk of getting some horizontal movement, on account of not getting value from the heat.

There will be eddies in the air current for several car lengths, beyond the inlet openings, which will assist in distributing the air through the tile and besides the tile in this end of the dryer should be nearly dry and beyond any danger. We may pass over several cars, therefore, before beginning to pull the heat down, but following these there should be a suction draft outlet, perhaps two

or three under each car for several car lengths. We may maintain this condition to the end of the tunnel, but many clays will be more safely dried if left a few hours outside the direct passage of the air currents. For such clays we would leave the receiving end with a dead bottom, two, three or four car lengths as the case may be. The car nearest the receiving end and last put in would be farthest removed from any direct air currents.

The next three or four car lengths would have the suction outlets under them and the hot moist air pulled down into the lateral duct would travel under the tunnel floor to the main cross exhaust duct, thus heating up the tunnel at the end and putting the tile, last put in, through a sweating stage which is essential to the successful drying of many clays.

Beyond the suction-outlet section would be several car lengths of a solid floor which would bring us to the hot-inlet section.

The tunnel thus becomes divided into four sections. At the delivery end an upward movement of highly heated air; a section in which the air eddies in changing from the upward motion to a horizontal, preliminary to a downward; third, a downward movement of partly saturated air; fourth, a dead air space in which the air movement would be only eddies, and in which the tile would be heated up and sweated to put them in condition for drying without cracking.

A dryer, of this character, will require a suction fan of the steel plate or Sirroco type.

A disc fan has too little power and will not be satisfactory. No fan is needed at the hot end of the dryer, because with a good suction fan the hot air can be pulled, not only through the dryer, but also to the dryer, from any point on the yard which may be the source of the hot air.

The induced draft dryer is not a new idea, since there are several dryers on the market in which the induced principle is used in some measure, but the special advantages of this type of dryer for hollow ware has never been pointed out, so far as we know,

ADDITION TO ENGINEERING CIRCLES.

Mr. Geo. W. Heald, for several years in charge of construction work on the various yards of the Illinois Brick Co., of Chicago, has opened an office at 216 Fisher Building, Chicago, and will devote his time exclusively to "Brickyard Engineering."

His services are at the command of brick yard owners who are considering alterations in their plants or of parties contemplating building new plants.

Mr. Heald gained much valuable experience as to the requirements of brick manufacturers by studying methods employed in the different yards of the progressive Illinois Brick Co., and in the design and construction of the manufacturing and power plants, as well as in the new kiln-sheds and electric generating machinery required by the introduction of the Penfield system of handling brick.

Previous to becoming connected with the Illinois Company he had many years' experience with some of the most prominent concerns engaged in the line of steam and mechanical engineering, including Fraser & Chalmers and Allis-Chalmers Co., of Chicago, and the Bates Machine Co., of Joliet.

The DeQuincy Brick Co., of DeQuincy, La., has sold its entire holdings to J. M. Ellis, of that place, who will continue the business.

RECLAMATION OF RIVER BOTTOM LANDS

Paper Read by John J. Harman, M. E., of Peoria, Ill., Before the Annual Meeting of Iowa Drainage Association Held at Mason City, Ia., Feb. 14—15

During the last decade, great strides have been made in the development of the bottom lands, adjoining the Mississippi River and its tributaries. These low-lying lands being subject to periodic overflow and containing large swamp areas, were formerly not looked upon as having an agricultural value, while the higher prairies, ridges and second bottoms of the valleys were easily available. As the country became more thickly settled, however, the prices of land increased and shrewd investors began to discern the great possibilities of these vast sedimentation basins, where the best soil washed from the hills and adjacent high lands had been accumulating for ages.

The wonderful fertility of the valley of the Nile, where statistics show that the "mediocre Egyptian farmers are able to sustain an average of three persons on every two

of the lands from overflows, the providing of adequate drainage ditches for carrying away the waters that fall upon and drain on to the land from adjacent territory, and the providing of an artificial outlet for the drainage ditches, when the water in the river is above the gravity outlet.

The protection of the lands from overflow was accomplished by means of earth embankments or levees, extending along the river front and reaching back to the high ground. These levees were built of sufficient size and height to exclude the highest known waters, and are thus reasonably sure of affording ample protection from overflow for all time, when kept in proper condition.

The drainage ditches consist of both open ditches and tile drains, the main outlets being provided in the general plan and the detailed drainage being ordinarily carried out by each land owner individually.



Overflow Lands which are being Reclaimed by Drainage.

acres of tillable land and still have a surplus worth \$2.50 per acre to ship to foreign markets," was a prophetic indication of what might reasonably be expected from our own bottom lands, made up of accretions of alluvial soil, deposited by the annual flood waters.

The promising prospect of greatly increasing the producing capacity of the country at large, as well as yielding handsome profits to the investors financing the improvements, soon made the reclamation of these valleys one of the great problems of the drainage engineers of the Middle West. Thus, we find the ingenuity of men at work, attempting in an humble way, to correct the shortcomings of nature, for while we, of the Mississippi Valley are planning methods of protection from a surplus of water, our neighbors in the arid west are devising means of entrapping the water from melting snow in the mountains and supplying it to the thirsting vegetation during the season of drouth.

Reclaiming Overflowed Lands.

This problem of reclaiming our overflowed lands divided itself, naturally, into three distinct parts: The protecting

The providing of an artificial outlet, during high-water in the river, was accomplished by installing pumping stations for lifting the water over the levees.

The method of reclaiming the lands is not new as it has been in use in Holland for over three centuries, and the experiments there in successfully working out this system of drainage were of great assistance in solving the problems of our own bottom lands. During the last eight or ten years many large tracts have been successfully drained, and in many others the drainage work is under construction, while still others are being organized into drainage districts, for purposes of development.

A notable project is that of the Kaskaskia River Valley, in Illinois, where the plans for the reclamation of the entire valley, including upwards of 150,000 acres of bottom land, are just now being completed.

I will confine my remarks chiefly to the projects bordering on the State of Iowa, which will no doubt be of most vital interest to this association.

In this territory, extensive drainage improvements have either been completed or are now under process of con-

struction. From Muscatine almost to Fort Madison the major portion of the land on both sides of the Mississippi River either has been, or is being organized into drainage districts. The organized districts, together with the approximate acreage, approximate cost of construction, size and capacity of pumps and date of completion are shown in tabular form.

Name and Location of District.	Approximate Average.	Approximate Cost of Improvement.
Drury Drainage District, Rock Island Co., Illinois	5,000	.....
Drainage Union District No. 1, Rock Island Co. and Mercer Co., Illinois....	4,000	.....
Bay Island D. & L. D. No. 1, Mercer Co., Illinois	20,000	\$242,000.00
Keithsburg Drainage District, Mercer Co., Illinois	1,350	52,500.00
Louisa-Des Moines D. D. No. 4, Louisa Co. and Des Moines Co., Iowa.....	13,000	97,600.00
Des Moines Co., D. D. No. 1, Des Moines Co., Iowa	28,000	326,000.00

machinery; the pump was kept steadily at work, however, while the rest of the construction work was carried out and a fair crop was secured on some of the ground that had been under water at the time the first pump was started.

The following year the plant was operated by a Board of Management, consisting of one supervisor from each

Size of Pumps.	Capacity of Pumps.	Date of Completion.
1—45-in. Pump	50,000 G.P.M.	1910.
Drains into Bay Island, D. & L. D. No. 1	.....	1908.
2—60-in. Pumps	200,000 G.P.M.	Pump plant completed 1910. Levee and ditches will be completed in 1910.
1—18-in. Pump 1—12-in. Pump	13,500 G.P.M.	Under construction.
2—45-in. Pumps	100,000 G.P.M.	Pumping plant 1909. Ditches 1910.
Main Plant: 3—54-in. Pumps Ext. Plant: 1—24-in. Pump 1—18-in. Pump	Main Plant: 240,000 G.P.M. Ext. Plant: 27,000 G.P.M.	Under construction.

Of these districts, the ones within the boundaries of the State of Iowa, namely, the Louisa-Des Moines drainage district No. 4, and the Des Moines County drainage district No. 1, form a contiguous body of land twenty-four



Pumping Station at Head of Drainage System.

miles long, having an average width of three and one-quarter miles and containing approximately 45,000 acres of reclaimed land. This land is protected from the high waters of the Mississippi River by a Government levee, construction work on which was started about fifteen years ago, and which was completed in 1898. This partial protection encouraged the farmers in cultivating the bottom lands, but for the most part no satisfactory results were obtained until pumping plants were installed to provide the necessary drainage when the river was high.

The Louisa-Des Moines drainage district No. 4 was organized in the year 1907, and an adequate system of drains was constructed leading to a pumping station of 100,000 gallons, per minute, capacity. The equipment of the station consists of a water tube boiler and two 250-h.p. tandem compound, condensing, four-valve engines, each direct-connected to a 45-in. centrifugal pump.

The No. 1 pumping unit of this plant was placed in operation on the 11th day of May, 1909, under most unfavorable conditions. The water was above the engine room floor level, the steam line was supported on temporary scaffolding and there was no building over the

county, and a drainage engineer was the executive officer.

Rules and regulations setting out the duties of the Board of Management as a whole and of the drainage engineer, and of the station engineer, were adopted by the Joint Board of Supervisors, and the operation of the plant under this organization worked out so satisfactorily that the plant is to be operated with the same organization, and under the same rules and regulations during the following year.

Complete records of the coal burned, water pumped, head pumped against and detailed cost of operation were kept, and semi-annual and annual reports made to the Joint Board of Supervisors.



Open Drainage Ditch with Artificial Outlet.

These are the first detailed reports and analyses of the cost of operation of a drainage pumping plant of which the writer has any knowledge, and it is thought that a series of reports of this kind covering a period of years will be of great value in determining proper and economical methods of drainage pumping plant operation and design.

In the Des Moines County drainage district No. 1, the design of the drainage system and pumping stations are worthy of special mention.

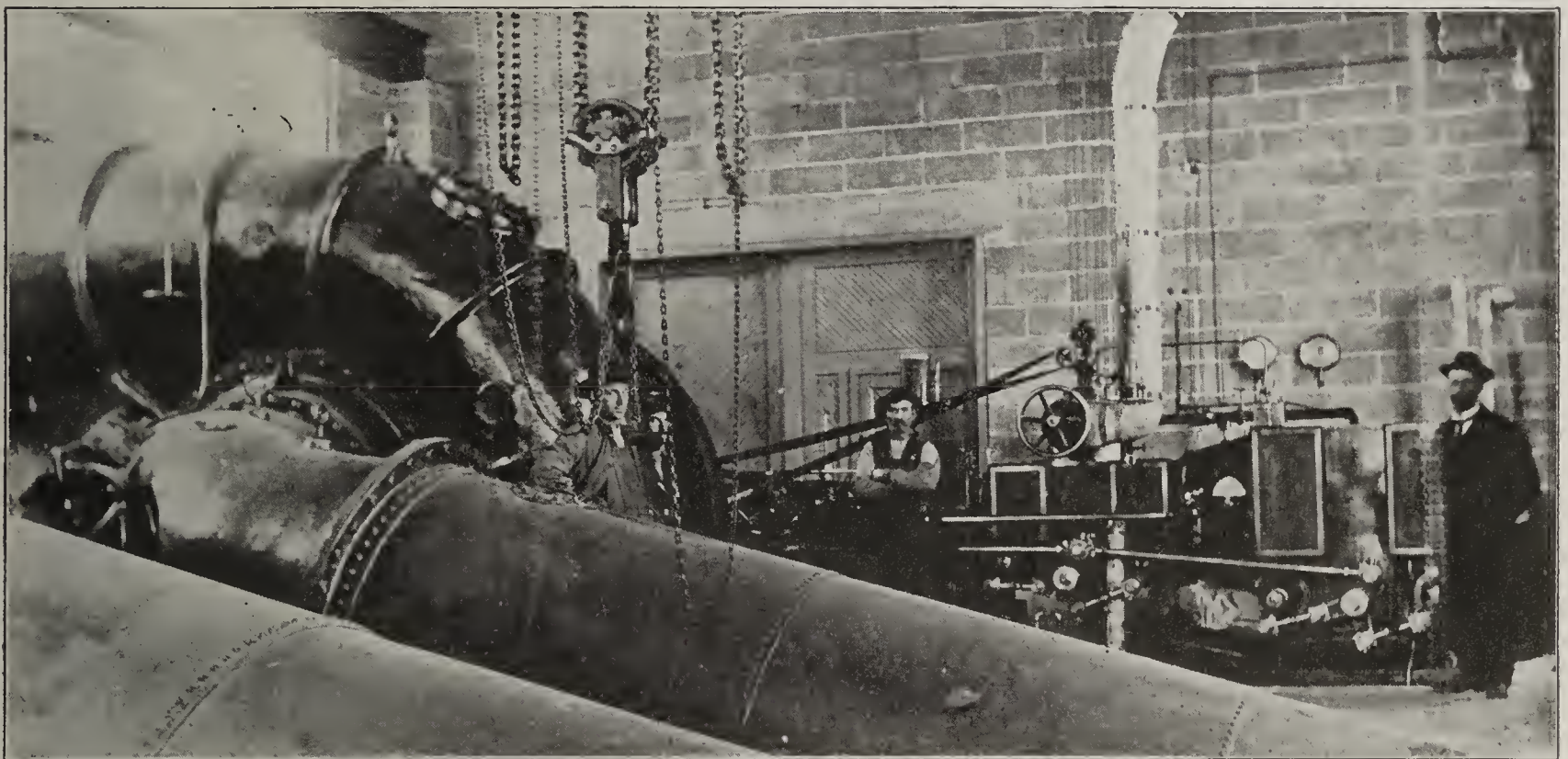
The preliminary survey of the territory showed that the water from about 45,000 acres of hill land drained into the district of which 13,000 acres came in through Hawkeye Creek, 7,000 acres through Dolbee Creek, 15,000 acres through Yellow Springs Creek, 5,000 acres through Dry Branch and 5,000 acres through smaller streams having drainage areas ranging from 40 acres to 1,500 acres, all of which would necessarily have to be pumped during high stages of the river unless special provision were made for diverting the waters.

It was not considered feasible to divert the waters from Hawkeye, Dolbee and the smaller creeks, but the original plans provided for carrying Yellow Springs Creek through the district to the river with a levee on each bank extending back to the high ground, and for diverting Dry Branch around the south end of the district. The diversion of Dry Branch was omitted from the final plans, however,

steam at 150 pounds pressure. The suction and discharge piping was designed with the idea of eliminating friction losses as far as possible, and forms a unique arrangement. The suction pipes lift the water from pits directly below the pumps, and the discharge pipes are expanded to a width of 7 ft. 6 in. and a height of 9 ft. 4 in. at the outlet ends.

Another interesting feature of the design is the position of the engines and pumps, which are set diagonally, thus making a compact lay-out and saving considerable floor space. The steam piping was designed so that repairs can be made on any boiler, or engine, or portions of the steam main without shutting down the entire plant. It will also be possible to run one or two units without turning steam into the entire main, thus avoiding unnecessary condensation losses.

The extension plant was designed along similar lines,



Splendidly Equipped Pumping Station at Center of a Drainage System in Iowa.

on account of objection to cost of construction by the land owners.

The district is divided into two parts by the Yellow Spring drain and two pumping plants are now being constructed, which we will designate as the main plant and the extension plant. The main plant will serve the territory above Yellow Springs Drain and will have a capacity of 240,000, G. P. M.

Ordinarily one would not expect to find a highly economical power plant located in the heart of a purely agricultural community, but in this case the size of the plant and many other reasons made high efficiency a prime requisite. Consequently, particular stress was laid on this feature in designing the plant, and the overall economy guarantee secured was remarkably low.

The principal equipment consists of 3 210-h. p. vertical water tube boilers, equipped with superheaters, open feed water heaters, etc., and 3 400-h.p. tandem compound condensing poppet valve engines, each direct-connected to a 54-in. double suction centrifugal pump. The poppet valve engines are guaranteed to deliver an indicated horsepower-hour on eleven pounds of steam, which is about 30 per cent. less steam, per horsepower, than the ordinary guarantee on four valve and Corliss engines, using saturated

but owing to the units being smaller the economy guarantees were not as good as at the main plant. The principal equipment of the extension plant is as follows: One 125-h.p. vertical water tube boiler with superheater, open feed water-heater, etc., and two tandem compound, condensing, high-speed engines, direct-connected to a 24-in. and an 18-in. centrifugal pump, respectively.

As evidence of the value of these improvements, it will be sufficient to say that lands which some fifteen or twenty years ago were practically sold for taxes, and within ten years could have been bought for \$10 to \$30 per acre, are now commanding prices ranging from \$60 to \$175 per acre.

SCRAPINGS.

The Wheatland Brick Co. has been incorporated with a capital stock of \$20,000 at Wheatland, Wyo.

At Fremont, Neb., the building adjoining the Y. M. C. A. block has been razed, and the prospects are that a brick block will be erected there before winter.

A number of residences in the course of erection in Omaha, Neb., are being faced with the product of the Hydraulic-Press Brick Co.

ENTERPRISING IOWA INDUSTRY

Well Constructed Plant of the Rockford Brick & Tile Co., Where Excellent Drain Tile, Brick and Hollow Block Are Made

One mile west of the thriving village of Rockford, Iowa, is situated the plant of the Rockford Brick & Tile Co., on a spur of the C., R. I. & P. R. R. This spur was constructed by the company at a cost of \$20,000 and includes a heavy steel girder bridge with heavy piers and abutment 150 feet long. The type is known as Cooper's Loading E 55 and is capable of handling the heaviest traffic. While the initial cost was heavy, the company views it as a matter of economy in the long run, as it settles the shipping problem definitely.

The company owns 87 acres of land, much of which is underlaid with rich clay. Prof. Samuel Calvin, late state geologist, made a survey of the clay bank and from the extreme top of the bank estimated its depth at 110 feet. The top stratum, 5 or 6 feet thick, is of fossiliferous

American Blower fans are used. Twenty-four hours are required for drying, after which the goods are set in the kilns, the brick 36 high, and the tile 12 high. The goods are burned in eight 26-foot down-draft kilns with sloping grates and lump coal is the fuel used, about 30 tons being the average used to burn each kiln.

The power plant contains a Murray Corliss 300-h. p. engine, 18x42 feet, and two 150-h. p. Murray boilers.

The product, so far put on the market by this company, has been of the finest quality and has received the highest commendation for its strength and uniform character. The chief products are building brick, drain tile and hollow block. About fifty men will be employed continuously during the twelve months of the year.

This plant was built in 1910 and commenced operating



Eight-Kiln Plant of the Rockford (Ia.) Brick & Tile Co.

marl, which is stripped off, disclosing a layer of shale 30 ft. deep, blue, green and yellow in color. The second stratum is of blue shale, estimated to be 60 or more feet deep.

The matter of developing the Rockford deposit has been discussed by the citizens there at intervals for many years, but the present plant is the result of an agitation originating about a year and a half ago. The company was promoted entirely by Rockford business men and the stock is all common and is practically owned in small allotments by Rockford people.

The clay is procured near the factory and is conveyed by cable to the tipple where it is dumped. The clay is not weathered or stored, but is at once put through the Fate crusher. It then goes to the granulator and then to the pug mill, where the clay is tempered with water, no sawdust or grog being added.

The stiff-mud process is used, the Fate premium molding machine being used. The dryer cars, of which there are 400, holding 570 common brick each, were made by the Globe Machinery Co. The dryer is 115x96 feet, with 24 tracks, each track accommodating 16 cars. Waste heat and exhaust steam are used for drying and two

January, 1911. The company expects to further increase the capacity by constructing six more kilns.

The officers of the company are John Brown, president; G. O. Mitchell, vice president; R. F. Bruce, secretary; B. A. Wallace, treasurer; D. K. Hemphill, manager, and E. E. Wilson, superintendent.

BIG ADVERTISING CAMPAIGN.

The brickmakers of the country should be on the lookout for the advertisements headed "Learn About Brick" which will appear in the following September magazines: Saturday Evening Post; Everybodys Magazine; McClures; Good Housekeeping; Craftsman; Country Life in America; Suburban Life; Literary Digest, and Cosmopolitan (dated October).

This advertising will appear also in the same magazines for October, and it is the plan of the Building Brick Association of America, which is doing this advertising, to continue these ads through the fall.

There is no doubt that this advertising will bring a great deal of business to the brickmaker and dealer, particularly to members of this association, to whom "Weekly Bulletins" are sent giving the name, address, etc., of each inquirer.

AT THE ROCKFORD PLANT



Entrance to Clay Pit, Rockford (Ia.) Brick & Tile Co.



Tramway from Pit to Clay Sheds.



The Off Bearing Crew at Work on Cut-Off Table.



Hollow Block in Dryer.



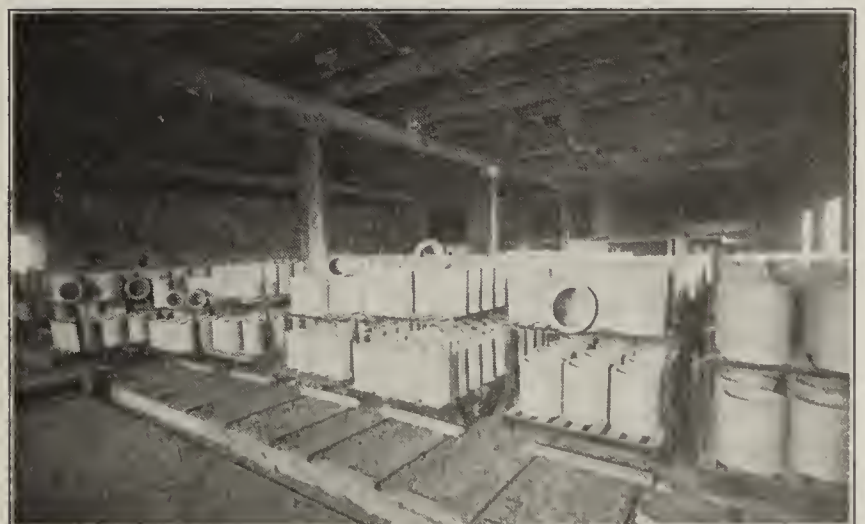
300 h. p. Murray Corliss Engine at Rockford Plant.



American Blower Fan at Rockford Tile Works.



Finished Product on Yards.



Drain Tile in the Drying Room.

SAMUEL STEVENSON.

The clay machinery industry lost perhaps its oldest and most successful builder when Samuel Stevenson, president of The Stevenson Co., of Wellsville, Ohio, departed this life on the 1st inst., in his eighty-third year, after a brief illness, from neuralgia of the heart, prior to which his hale and vigorous physique and bearing bespoke a finish beyond the 100-year mark.

Mr. Stevenson was the son of James and Hannah J. Stevenson and was born in Philadelphia, Pa., December 25, 1828. His parents were natives of Ireland and came to the United States about 1825 and located in Philadelphia, where they lived until 1838, removing to West Virginia near Wellsville, Ohio. A year later the family settled on a farm in Yellow Creek township, Columbiana County, Ohio. In 1842 they moved to Wellsville, where the family has since resided.

Mr. Stevenson was 10 years old when he went to Wellsville, and at the age of 14 he began the study of mechanics, which he continued for five years. Upon obtaining his majority he engaged in steamboating on the Ohio river. He served as assistant engineer for six months and was later promoted to second engineer. He later passed an examination for first engineer and served as such on various boats for 20 years.

It was in 1862, that he became superintendent of the P. F. Geisse machine shop in Wellsville, where he learned his trade, remaining in the capacity of superintendent until 1872, when he bought out the business.

Scarcely a day that he was not keenly, in a sense, supervising the operation of the works for a couple of hours forenoon and afternoon and apparently enjoying as keenly every moment of the time. Though the management has been entrusted to his son, Charles G., for many years, he was a constant adviser and overseer and the employes esteemed him as a father.

For upwards of seventy-five years as apprentice, journeyman and owner he pursued the business in the same plant, several times reconstructed and enlarged, in which as a boy he began his career, save an interval of a few years which he spent on the rivers steamboating; and he was as wedded to it as man to wife. Serving as apprentice, journeyman and general manager for P. F. Geisse, he later associated himself with his brother, Thos. B. Stevenson, in the purchase and conduct of the plant under the firm name of Thos. B. & Samuel Stevenson, succeeded later by Stevenson & Denham, and later still by Stevenson & Co., in which his two sons, Chas. G. and William G., were associated with him. In 1900, a corporation was formed bearing the present title, The Stevenson Co., and today his

dreams are realized in a plant and product that ranks among the first, if not the first.

Samuel Stevenson was the originator of the dry pan system of reducing clay, shale and sandstone to powder, building the first pan on the market in 1871, for the late Thomas Anderson, of New Cumberland, W. Va. All the numerous makes on the market today are modeled largely after the first fruit of Mr. Stevenson's mind and the famed Stevenson pans of today are only large developments of, and improvements upon, this original structure.

Mr. Stevenson, as has been stated, was ill but a few days and seemed to be recovering nicely when his call came suddenly and unexpectedly. He had spent part of the afternoon with his family below stairs and ate dinner with them, but soon after retiring to his room, whilst being robed for the night, without a gasp he fell from the arms of his daughter and breathed no more.

Business was largely suspended in the city during the hour of his funeral obsequies, to permit the citizens to attend, and numerous friends in the iron and clay industries from a distance were present to testify their respect and esteem.

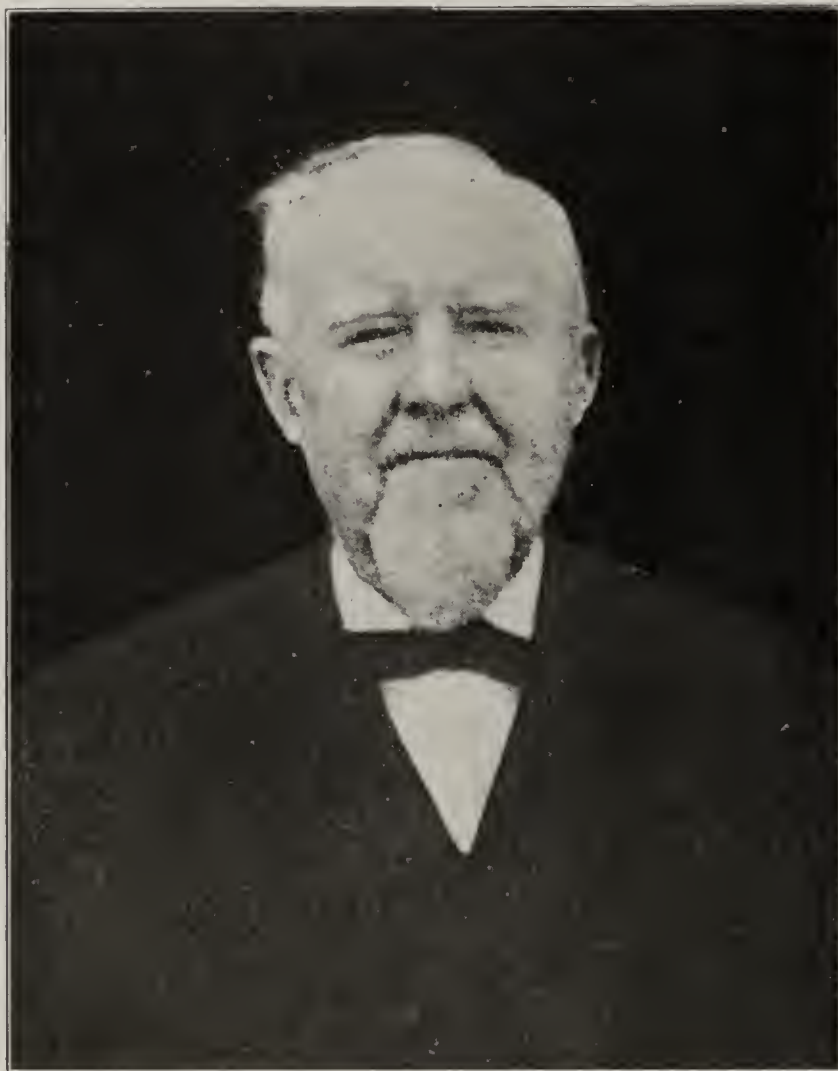
The business will be conducted as heretofore in the name of The Stevenson Co. as formerly, with Charles G. in charge.

Mr. Stevenson was one of the founders of the Peoples National Bank of Wellsville, and a life long member of the First United Presbyterian church. He was twice married.

He is survived by the following children: Charles G. Stevenson, who was associated with his father in business; Misses Helen and Nan, who live at home; Mrs. L. G. Auginbaugh and Mrs. G. W. McMillan, both of Wellsville; Mrs. M. E. McKim and William G.

Stevenson, of Oregon, Ill.; Mrs. Thos. Rogers, Garret, Ind.; Mrs. Ralph Sweetzer, Columbus, O.; Mrs. Thomas Hibbins, St. Marys, Pa.

Mr. Stevenson made the plans and built the first dry press for brick and sewer pipe plants ever used in the United States.



Samuel Stevenson.

FALLSTON PLANT REBUILT.

The Fallston Fire Clay Co., of Fallston, Pa., whose plant burned to the ground last spring, is almost ready to resume work in a fine new structural-iron building, fireproof throughout. No Western Pennsylvania plant will be more up-to-date. The machinery installed by the Stevenson Co., of Wellsville, O., consists of three 9-foot dry pans, three elevators, two 12-foot pug mills, one No. 5 rock breaker, every piece of which is motor-driven. Two of Freese's mammoth brick machines, with automatic cutters, are a part of the excellent equipment; they, too, are motor-driven.

TILE DRAINAGE BENEFITS

Organized Effort Among Drain Tile Manufacturers for Systematic Education of the Public as to Advantages of Drainage—The Need of the Hour

By C. B. Platt

The clay tile industry has been a great one and has everything in its favor for a still greater future. It has already done more to increase farm values, better the health of the nation, and increase the wealth of the nation, than any other one thing.

There is no other thing so absolutely necessary, on all farms today, as tile. There has been probably at no time



Soil in Need of Drainage.

a situation, so fraught with possibilities for a wide spread interest in the proposition of general farm tile drainage as that of today, and yet, tile can be purchased in the principal markets for a song. Profits have long since been sacrificed because no organized effort has been made by tile manufacturers and dealers to acquaint the farmers and land owners with the fact that tile properly installed increases and deepens fertility. They create a storage basin for moisture and are consequently a dry weather necessity and a soil conservation demand. They are, in short, a dry weather insurance policy.

Dynamite manufacturers, like all wide awake manufacturers, are not slow to advance talk which is pre-eminently "tile talk." They are telling the farmers about the advantages of "sub soil plowing" or loosening of the subsoil for moisture storage conditions by the use of dynamite and they are telling them in no half-hearted manner. They are using expensive advertising mediums, mediums which really reach or cover a circulation clientage not purely rural and they are spending large sums to tell the general public the necessity for preserving fertility of the soil by deepening its present area. All this is purely tile talk. No other plan will give the results in this line, permanent results, that can be obtained from the use of tile.

Source of Wealth.

Soil study, its conservation and extension, is the subject before the agricultural world and political economists today. It is a subject so wonderfully important that it is of interest to every citizen, be he a farmer or a dweller in the cities, dealing as it does, with the source of all wealth and the maintenance of life. The subject will grow as a matter of general discussion and the farmers will be forced

to consider it. What is the best way to prepare the soil for the deepening of fertility and for crop insurance? The observer can readily see that drain tile properly installed, solves the problem.

It will not show good judgment for the tile people to allow this subject to come up before the general public as a new idea in the use of dynamite, but rather it would show good business economy to advertise strongly the truth as to the advantages of drain tile. Can any tile manufacturer follow the arguments of the agricultural editors covering the questions of soil conservation; crop rotation; fertilization, and cultivation, in fact any of the questions of importance having to do with farm land development and economy in operations of cultivation, without seeing that all the ends sought are best obtained or aided by the general and liberal use of tile, not alone on wet lands but just as extensively upon all cultivated fields?

The use of drain tile can be considered, in its extent, one of the most remarkable achievements in modern industry. The very extended use, without the aid of any publicity movement whatever (it can be readily observed that even the farm papers treat the subject very gingerly) proves, beyond the shadow of a doubt, that the profitable results obtained in tile drainage operations are so remarkable that were they generally advertised and were the possibilities not now generally considered, made known by a comprehensive and extended advertising campaign, the demand would far exceed any probable supply for many years to come.

What is fertile soil? Finely divided particles of disintegrated rock, mixed with decayed vegetation and the chemical residue coming from the action of these elements in contact with air and moisture in the soil. Rich soils and



Field Showing Barren Land in Need of Drainage.

fertile soils are not necessarily the same. Rich soils having a deficiency of soil air and a surplus of water are not fertile until drained, and fertile soils are often fertile under only most favorable weather conditions. Fertile fields have little depth of fertility, owing to the fact that they are naturally drained and the impervious subsoil (so called impervious) being so close to the surface that when rainfall is irregular or deficient there is not enough depth of porosity to supply the necessary moisture storage room to tide over dry periods and in order to deepen the fertility of such fields it is only necessary to open up the subsoil by means of tile drains.

Plant food, which was formerly of unknown origin is

composed of some thirteen elements and those used in the greatest quantities come from the air in the form of rain and carbon. The mineral elements contained in plant food are generally present in all soils in sufficient quantities to last an indefinite time. Carbon is secured from the air direct, through the green leaves of the growing plants. Nitrogen comes from the air but is introduced into the soil only in such very small quantities, as are scarcely appreciable, by rainfall. This is obtained through fertilizers and the growing of legumes. Plant food being liquid and available only under the proper measure and this measure being only possible in noncompacted soils, or drained soils, it is apparent that drainage, deep drainage, is essential to soil fertility.

Educational Campaign.

Are these simple truths generally appreciated? No doubt manufacturers of tile know these things but the majority of their customers do not know them. They know little as to the results accomplished by drainage. The proper method of acquainting them with the advantages of tile drainage is to distribute literature on the subject, handled in a direct plain manner, showing what has been accomplished.

The question seems to be, how can this be successfully done. There appears to be but one answer and that is co-operation between manufacturers of drain tile and the dealers selling them, in an advertising campaign—a campaign of education. This co-operation must start with the manufacturers.

Large producers think that they can handle the proposition to better advantage themselves, and their individual advertising is essential to their own particular marketing problems and in nearly every case, undoubtedly, much more money could be spent by them to good advantage than they are now spending. This does not, however, prevent them from realizing very great advantages as the result of a general campaign of education, covering a field much wider than any individual producer could hope to reach or cover, and which would so materially increase the demand in every market as to remove from consideration all questions of ruinous competition and would leave their individual advertising appropriations free from all incumbrances of the educational sort and consequently be much less expensive, or, if the same space is used as would be used in carrying educational features, the individual effort would be much more profitable.

It is time to act now. It will not do to let others into this field, "stealing our thunder" with their talk, which is rightly our talk. We should have been in the field before this, stating in no uncertain terms the fact that the way to deepen and retain fertility in all soils is to install deep clay tile drains. Such an organization is now in force, and is about to commence advertising in farm journals, calling attention to a book which has been carefully prepared, which deals exhaustively with the tile drainage subject and which will be sent free. This is not a money making scheme of advertisers but is purely for the benefit of the clay tile business and is so organized that all territory secures the benefit of their subscription in advertising in the territory or state of the subscriber. The bureau, which is known as the Western Tile Drainage Bureau, with its present corresponding office at Van Meter, Ia., should be supported in a manner to insure its continuance, that a continuous line of literature may be offered to the farmers and land owners on this great subject of tile drainage.

GENOA BRICK & TILE CO.

Near the town of Genoa, N. Y., on the N. Y. A. & L. R. R., is situated the small but prosperous plant of the Genoa Brick & Tile Co. Red drain tile in sizes from 2½ to 8 inches are made from strong plastic clay, which is procured near the plant from a bank, averaging 7 feet in depth.

The clay is dug in the early spring and in the late fall and hauled by horse and cart to the factory, which operation is made easier from the fact that the clay bank is on an elevation.

The clay is tempered in square pits, some water being added in the pug mill, which is of the American make.

The tile are made on an American Clay plunger machine of 15,000 capacity and a hand cut-off is used.

In setting the one large kiln, which is of the rectangular down-draft type, the 2½-inch tile are set on the bottom of the kiln; 8-inch on top and other sizes in between; all are set nine-tile high.

Open flues, in the kiln, are made by placing four courses of brick on bottom of kiln, leaving a space of about 4½ inches, and another course on edge upon these, interlocked.

A gasoline engine furnishes the power at this plant, which was established in 1902, and enlarged in 1907. A number of improvements are being planned, including a crusher and elevator.

The officers of the company are: J. W. Skinner, president; Chas. Lester, vice-president; Robert Mastin, secretary and treasurer, and Chas. G. Foster, manager.

SMALL, BUT PROSPEROUS.

The owner of a small tile plant, while suffering from some disadvantages, has many things to be thankful for. He can be much more independent and with a small



Milo (Iowa) Brick and Tile Plant.

crew can just about run things to suit himself. If business is slack he can readily reduce the working force and with a few men can operate the plant at small expense until trade picks up again. Such a plant is that of the Milo (Ia.) Brick & Tile Co. The soft-mud process is used and the ware is burned in down draft kilns coal being the fuel used. The machinery with which the plant is equipped was largely furnished by the American Clay Machinery Co., of Bucyrus, O.

LAYING OF DRAIN TILE

Paper Delivered by A. F. Greaves-Walker, of the C. W. Raymond Co., Before the Meeting of the Northwestern Drain Tile Association at Toledo, O., April 11, 1911

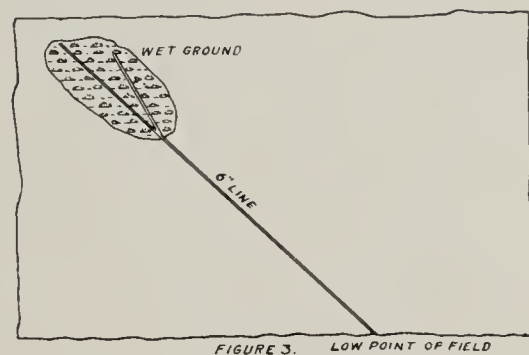
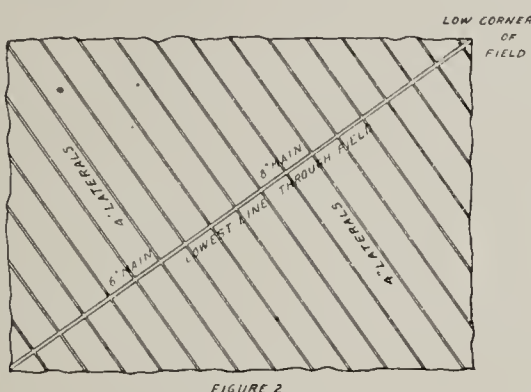
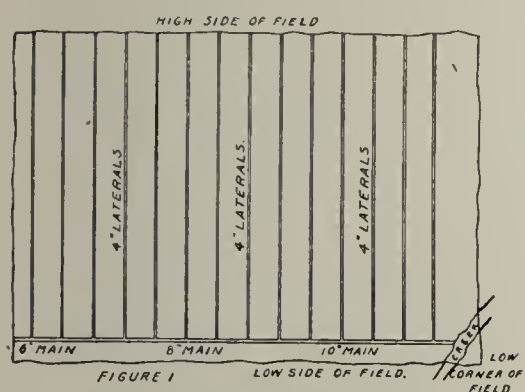
In some sections of the country the use of drain tile has been somewhat backward, largely because unfair tests have been occasioned by a lack of the knowledge of the correct principles in laying. To obviate this a few suggestions as to the proper method of laying may not come amiss, and too much stress cannot be put upon the fact that the greatest care should be taken at this stage.

Wet, soggy ground will not produce satisfactory crops because the roots of the plants are kept at low temperature, and also sufficient air cannot penetrate to them. It is almost useless, therefore, to place the tile so near the surface that deep-rooting crops will penetrate under the tile, which will keep them in practically the same condition as if no tile were used. Again, the closer to the surface the tile are placed the smaller will be the effective drainage area of each line, while the deeper they are

land is situated in a valley and gets all the drainage from hills on each side and above, or, as is often the case in the western irrigated districts, the tract is located below a ditch and is continually getting the seepage from it, a large line may be necessary. In other cases once the low spot is drained, it may give the line very little to do, in which case a smaller line will answer.

It does not pay in any case to use tile less than 4 ins. in diameter, and in the greatest majority of cases a 4-in. tile will be sufficiently large. In using 3-in. tile, the chances of clogging are so great, and in most cases its use has been so unsatisfactory that drainage engineers are discouraging its use.

The lateral ditches should not be less than 4 ft. deep, and unless the soil is a heavy clay, they should be 5 or 6 ft. The distance between the laterals is a question of



placed the greater effective area is obtained, and consequently fewer lines will be required.

Another trouble encountered in laying tile in shallow trenches is that of roots growing into the lines between the joints. Cases have been known where this condition blocked a large tile line in a single season, making it absolutely useless.

In the proper laying of drain tile the necessary fall must be taken into consideration, as it is obvious that the lines cannot be lower than their outlet. If the outlet prevents the laying of the tile to the proper depth, it is often useless to lay them at all. Furthermore, it may often be necessary to lay a long main line to an outlet that will give the proper fall. When such a case occurs it should be done unhesitatingly and regardless of expense if good results are desired.

If a large tract of flat, low ground is to be drained, it will be found best to employ an engineer to run levels over it. Only in this way can good results be obtained, for with the various levels to work from a perfect system with the proper fall can be laid out, and this experience may be of benefit in determining the amount of moisture to be carried away. Even on tracts that have one or more wet spots, it would be found a good investment to have levels run, as sags or dips in the line are then absolutely avoided.

Planning the System.

In planning the system, the kind of soil will determine the number of laterals or lines necessary. An open or sandy soil will not require the laterals to be laid so close together as in the case of a sticky clay soil, as the water can be drawn through it for a greater distance. The next consideration is the amount of moisture to be carried away, which, of course, varies with every tract. If the

soil to some extent, but in most cases when the tile are placed 6 ft. deep, the ditches are placed 8 to 12 ft. apart. This may seem very close and entirely unnecessary, but if a perfect drainage system is to be made, these distances will be found approximately correct. The main line, into which the laterals feed, will, of course, be placed along the lowest line through the tract. Only enough fall need be given to the lines to carry off the water. (Figs. 1 and 2.)

In the case of a tract having one, or a series of low spots, it is often only necessary to run a single line through them, or a line with one or two branches. In this case also the line should be deep. (Figs. 3 and 4.)

Covering.

After the ditch is ready, the tile should be laid perfectly true, the joints butted as close as the edges will allow. If the ends are rough they should be smoothed up, for wide openings between tile are not permissible. On top of the tile and around the sides should be placed a coating of straw or brush. This need only be thick enough to completely cover the tile. On top of this several inches of fairly clean gravel should be thrown, and then the ditch filled. A line constructed in this manner will never give the slightest trouble and will do twice as much work as a line that is simply laid down and filled over. The coating of straw or brush and the cover of gravel act as a filter, and not only prevent the newly filled earth from being carried into the line through the joints and thus choking it, but give it a great drawing power. The vegetable matter will, of course, rot away in time, but by the time this happens the ditch will be in such condition that no loose soil will be carried through the gravel. Too much straw or brush should not be used. (Fig. 5.)

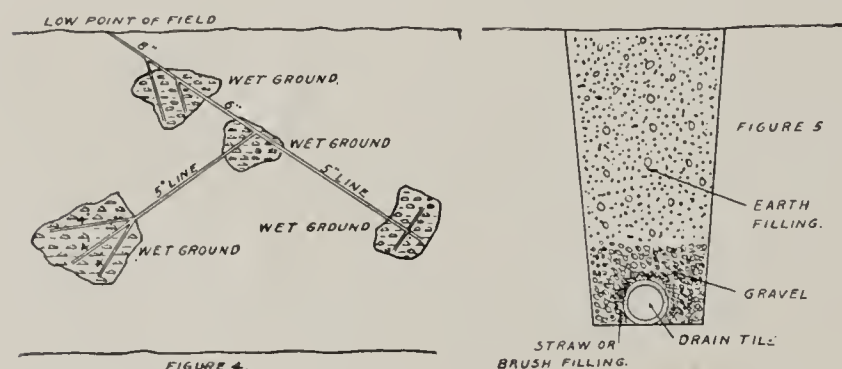
A new use for drain tile is for sub-irrigation. The tile are laid in the same way as for draining, but generally not more than 4 ft. deep, and the lines closer together. Instead of giving the lines a fall, they are laid perfectly flat. The main line may be run to a gate in a ditch or to a windmill or other pump. In case of a dry spell in most climates, or in the case of arid climates, the water is fed into the main until the lines are filled, and the water is thus fed to the roots of the plants where it properly belongs. In arid regions, the great loss by evaporation, which takes place in open ditches, is thus avoided, and the crops are benefitted to a greater extent, for roots will always seek the moisture.

Fertilizers can be fed into the lines by this method, especially the drainage from manure heaps.

Main lines should always be large enough to carry off all the water to or from the laterals.

The United States Department of Agriculture, as well as most of the states, maintain drainage engineering departments. The men employed are experts in their line and are always ready and willing to advise and help those seeking assistance. These men being thoroughly acquainted with soil conditions in different localities, can give the proper advice to farmers in any particular locality. It is well to seek this advice, as much money and trouble can be saved by doing so.

That the farmers of the country are awakening to the value of drainage can readily be seen. In all parts of the



country, field after field is being equipped with drainage system, and the fact that the drain tile manufacturers cannot supply the demand is ample proof that more drain tile plants must be erected. This undoubtedly will be done, as the clay workers have been trying for years to boom the use of clay drain tile, and will now be only too willing to make preparations to supply it.

It might be well in closing to say a word about the hardness of drain tile. The old idea that the water must enter the line through pores in the tile, and that therefore the tile must be porous and open, is practically a thing of the past. The tile should always be burned hard, practically vitrified, so as to avoid any possibility of disintegration. Whole systems have been ruined by the disintegration of one or two soft tile, with the attendant break in the lines. If possible, tile with a salt glaze should be used, and while few tile makers are at present salt-glazing their ware, salt glaze tile are being given the preference. While the salt glaze is not necessary, the tile should always be hard enough to resist scratching with a steel knife.

TILES IN BRAZIL.

Tiles are universally used in the cities of Brazil, all the houses in Pará and Manaus being roofed with large red tiles. Some of these are imported, but a great many are made locally.

THE STRAIGHT PLANT.

How much Iowa farmers are indebted to drain tile makers for their fine crops and prosperity cannot, perhaps, be estimated, but certain it is that drain tile has played a leading part in reclaiming low swamp lands, formerly useless, which by the use of tile have been made the richest and most fertile in the country.

One of the plants which sprang up to meet the continued demand for drain tile was that of the Dallas County Brick & Tile Co. at Adel, Iowa.

The company owns a track of 60 acres of clay land, situated on the C., M. & St. P. R. R. The clay banks now being worked, are about half a mile from the factory. The top stratum is green shale 15 ft. deep, overlaid with sand and underlaid with 7 ft. of fireclay, below which are 15 ft. of red shale, then another vein of fire clay extending down to sand rock.

The clay is blasted and loaded into two-yard dump cars in which it is hauled to the plant and deposited in a shed, 95x30 ft. The shale is ground in a Frost dry pan, after which it is screened then pugged in the 10-foot double grand Brewer pug mill.

The tile are molded in a Fate Imperial machine and dried by waste heat and exhaust coils. The 16-track dryer, with a capacity of 56,000 4-inch tile is supplied with 280 cars. Electrical transfers of the company's own make are used.

The tile are dried about 20 hours and are then set 12 to 14 high in one of the ten 30-ft. up draft kilns of the open floor type.

The tile are water-smoked before burning, on an average of 20 to 30 tons of coal being used to burn a kiln of ware.

The power plant consists of one 150-h. p. engine and two 80-h. p. boilers, all furnished by the Frost Mfg. Co., of Galesburg, Ill.

The plant was established in 1904 and enlarged in 1907-8-9. It is operated during the entire year—drain tile from 4 to 26 inches in size being the only product manufactured.

The company has a good business and reports a fine outlook. The officers are: L. S. Straight, president; G. H. Straight, vice-president, and H. K. Straight, secretary.

TO EXCLUDE ROOTS.

To prevent tree roots from getting into tile drains the "Encyclopedia Britannica" recommends using coal tar and sawdust mixed to the consistency of thick mortar; the joints of the tile to be covered an inch or more in thickness. Moeller Bros., of Knierim, Iowa, recommend using two sets of pipe for excluding tree roots, in the manner recommended above for quicksand, and covering the outside joints with cement mortar.

GOOD INVESTMENT.

Drain tile business in Ohio appears to be a good investment, for another company has entered the field. This is the C. A. Nelson Drain Tile Co., at Beaver Dam, O., which has just been formed with \$10,000 capital. The company will go into the business on an extensive scale before long.

KILNS TO BE REMODELED.

We are informed that Mr. Anton Vogt and his sons have leased the brick yard at Lewis, Iowa, and will soon take charge. Mr. Vogt says he will remodel the kilns and make them "fool proof."

NATIONAL DRAIN TILE CO.

Mammoth Clay Manufacturing Industry of Seventy-Kiln Capacity, the Result of a One-Kiln Plant Established Thirty Years Ago

With an annual capacity of 6,000 car loads of tile per year, the National Drain Tile Co., with five immense plants, located at Terre Haute, Summitville, Montezuma and Hillsdale, Ind., and at Streator, Ill., with direct access to twelve large railway systems, is enabled to supply any



National Drain Tile Works at Terre Haute.

city or town in Indiana, Ohio, Illinois and eastern Iowa, with tile in any size or quantity, on short notice.

Growth of the Business.

This gigantic industry is not the result of some millionaire investment, sprung into life in a day, but is the slow and steady growth from one little, lonely tile kiln, built thirty years ago by Mr. S. C. Cowgill, among the cornfields of Highland County, Ohio, twelve miles from the nearest railroad.

In a few years he moved to Cadiz, Henry Co., Indiana, where he built three kilns, and, in 1880, he removed to Summitville, Ind., where he continued in business alone

The Terre Haute Works are located in Vigo Co., Indiana, about two miles west of the city of Terre Haute, on the Vandalia and Big Four lines. Here the company own 100 acres of coal and shale land, a 5-foot vein of coal lying immediately below a 25-foot bank of shale. The shale crops out of the very surface and the entire bank is utilized, providing an abundance of shale and coal close at hand, while immediately beneath the 5-foot vein of coal are 8 feet of fire clay, and 160 feet below the surface there is still another 5-foot vein of coal. It will thus be seen that Nature has very lavishly bestowed good things, in the immediate vicinity of Terre Haute, for the location of a modern tile plant.

In dimensions this works is 208x80 feet and three stories high, with engine, boiler and machinery rooms, 128x40 feet, adjoining—solidly built of concrete and hollow building block, fitted with the latest improved machinery, heated by steam, lighted by electricity.

How the Tile Are Made.

The method of manufacture is practically the same at each of the five plants. The shale is first blasted from the shale bank, where it begins its journey in dump cars, drawn by a steam winding drum, up an incline into the clay house, where it is slid down a chute into one of Taplin, Rice-Clerkin Co.'s dry pans, where it is ground: from there it is elevated to the fourth floor and passed over screens, thence to the pug mill, thence to a conveyor, which is reversible in its movements, carrying the shale at the will of the operator, either to one of Madden & Co.'s auger machines or to a Taplin, Rice & Co. steam



Laying 24-inch tile through a cut 16 ft. deep, by the National Drain Tile Co., in a 7-mile contract in Iroquois County, Ill.

until 1890, when Mr. Harry O. Whitney became a partner, after which time, the business was conducted under the name of the Summitville Tile Works until 1902, when the company was reorganized under the name of the National Drain Tile Co., with a capital stock of \$600,000, with S. C. Cowgill as president, and with headquarters in the Rose Dispensary Building, at Terre Haute, Ind.

This company has become widely known and is one of the most prominent in the clayworking industry. All of its factories are run both summer and winter, and when the trade demands it, night and day shifts crowd the process of manufacture to the limit. About 350 men are employed at its various factories.

press, according to whether small or large tile are to be made.

The tile are then trucked from the auger mills or steam presses into the drying rooms, where there are some six acres of floor space, heated by exhaust steam from the engines and steam presses. After the tile are thoroughly dried, they are trucked into the kilns and burned—70 round, down-draft, 30 and 33-foot kilns being required to take care of the average daily output.

The National Drain Tile Co. points with pride to the hundreds of miles of tile ditches it has furnished throughout the country, and to the fact that it has never had a "ditch case" in court.

PROSPERITY REIGNS.

We are pleased to note the continued prosperity of the busy firm of J. C. Steele & Sons, builders of brick and tile-making machinery at Statesville, N. C., which report shows that the season continues very busy with them and that they have recently shipped brick-making outfits and equipment as follows: 15,000 capacity per day outfit to Drakes, S. C.; 25,000 capacity per day outfit to McDade, Texas; 15,000 capacity outfit to Fairmont, W. Va.; 40,000 capacity outfit, including the Steele drying system, to Goldsboro, N. C.; 25,000 capacity outfit to Dunn, N. C.; 15,000 capacity outfit to Parkersburg, N. C.; 15,000 capacity outfit to Ayresville, Ga.; 25,000 capacity outfit to Seaford, Del.; 75,000 capacity outfit to Marshall, Texas; 15,000 capacity outfit to Panola, Ala.; 25,000 capacity outfit, including automatic side cutting appliances, to Vincennes, Ind.; 15,000 capacity outfit to Saluda, S. C.; 15,000 capacity outfit to Milliken, Colo., and a 15,000 capacity outfit to Contreras, Mexico. A 40,000 capacity outfit, including the Steele drying system, has just been shipped to Taft, Cal., also a 25,000 capacity outfit has recently been forwarded to Marianna, Fla. Equipment for a Steele lift car drying system has been shipped to Nettleton, Miss.; Augusta, Ga.; Brewton, Ala.; Mt. Holly, N. C.; Clarks, N. C., also to Camp Hill, Ala. A 75,000 capacity cutting table has just been shipped to a large brick works at Molino, Fla.

NEW MANAGER OF PULSOMETER CO.

Mr. F. B. DeGress, for over ten years New York district manager of the Crocker-Wheeler Co., has resigned from that company to assume the position of general sales-manager of the Pulsometer Co., 17 Battery Place, New York City. Besides looking after the sales end of the business, Mr. DeGress is also carrying on a series of experiments, with a view to improving certain features of the pulsometer in order to make it suitable for general pumping work in power plants, industrial establishments, etc., so that it may become as popular for this class of work as it is in the general contracting field where it is now so well known.

STEVENSON CO. REMODELING PLANTS.

The Stevenson Co., of Wellsville, O., are equipping and remodeling the fourth consecutive plant for the Robinson Clay Product Co., of Akron. This plant is known as their No. 4 works. Two of Stevenson's standard 40x52-inch presses have been installed. These are the presses which have given the Robinson Company such eminent satisfaction heretofore, increasing their output beyond their expectation and improving the quality in a marked degree. Their new plant, No. 9, was the first installed by the Stevenson Company and it is a model institution, being one of the most complete sewer pipe plants in the States. It is a three-press plant, electrically driven throughout. Each and every plant the Robinson Co. remodel will be modern in every respect.

EXTENDING ITS HOLDINGS.

The "Portland Telegram" states that the Denny-Renton Clay & Coal Co., of Seattle, has purchased the plant of the Diamond Brick Co., six miles from Vancouver, for a reported consideration of \$200,000. It will be remembered that only recently the Denny-Renton Company purchased the extensive property of the Western Brick Co. at Portland and announced that they would install a large paving brick plant in connection with it.

IMPORTANT CONSOLIDATION.

"The Brown Instrument Co., the first concern to manufacture pyrometers in the United States, and whose office and laboratory have been located at 311 Walnut St., Philadelphia, since 1860, has been forced to move to larger quarters by the great increase in its business, which has more than quadrupled during the past five years. The business was originally established by Edward Brown and bore his name until recently, when an incorporated company was formed, of which Richard P. Brown is president.

As electrical instruments play an important part in the construction of pyrometers, it has been Mr. Brown's desire to be able to superintend the construction of milli-voltmeters for use in their pyrometers, so as to best design the instruments for pyrometric use.

With this end in view, Mr. Brown has become president of the Keystone Electrical Instrument Co., of Philadelphia, which, for a number of years, has been manufacturing voltmeters and ammeters, and the shops and laboratory of the Brown Instrument Co. are being combined with those of the Keystone Electrical Instrument Co., at Ninth St. and Montgomery Ave., Philadelphia, which places the Brown Instrument Co. in the unique position of controlling the construction of their milli-voltmeters for their pyrometers, even to the manufacture of the raw materials, such as the magnets.

The voltmeters and ammeters manufactured by the Keystone Electrical Instrument Co. have been always designed in a manner to particularly meet general industrial service, and under the suggestions of Mr. Brown, slight changes in construction have been made, which will particularly recommend them to engineers who will recognize these improvements. Their sales will also doubtless increase through the live organization of the Brown Instrument Co.

By this arrangement, the Brown Instrument Co. and the Keystone Electrical Instrument Co. will manufacture pyrometers, thermometers, speed indicators, draft gauges, recording gauges, voltmeters and ammeters. In fact, they are now in a position to manufacture or repair practically any type of instrument.

In addition to the works and office at Ninth St. and Montgomery Ave., Phila., an office will also be maintained for the present at 311 Walnut St., and the branch offices of the Brown Instrument Co. at Pittsburg and Chicago will, of course, also be continued.

DEATHS IN THE RANKS.

William Hallam, aged 90, first superintendent of the Laclede Fire Brick Co., and for many years associated with the Laclede-Christy Clay Products Co., died recently at St. Louis.

Fred G. Uthoff, 40 years old, secretary of the Consumers' Brick & Quarry Co., died last month at his home in St. Louis.

A. D. Ruckel, a pioneer in the pottery industry at White Hall, Ill., died in July.

John Bertles, for twenty years engaged in the brick and tile industry at Lexington, Ill., died recently.

\$100,000 ORDER.

The Federal Terra Cotta Co. of Woodbridge, N. J., have received orders, recently, for over a quarter million dollars worth of business. The principal orders are from the National City Bank of Richmond, Va. The plant is now being worked to its full capacity to deliver the material on time. Officials of the company state that the current reports that the Federal company has been purchased by the Atlantic Terra Cotta are unfounded.



Tile Plant of G. G. Wheat, Emmetsburg, Ia.

ESTABLISHED BEFORE THE WAR.

The following interesting description of the Cannelton Sewer Pipe Co.'s plant appeared in Municipal Engineering:

In connection with coal mining operations at Cannelton, Ind., previous to 1850, deposits of a superior quality of clay for stoneware manufacture were discovered. In the early fifties the Clark Brothers of Ohio, attracted by this deposit, built a small plant, which was the nucleus of the present Cannelton Sewer Pipe Co. This small plant continued in the manufacture of sewer pipe and other stoneware for about 45 years, when for various reasons the plant was taken over for the exclusive manufacture of stoneware.

By reason of the splendid quality of the product, several local parties with a thorough faith in the properties of the clay for sewer pipe organized and capitalized the present company. This company, the officers of which are John Meyer, of New Albany, Ind., president; Henry Bosquet, of Louisville, Ky., vice-president; A. P. Clemens, of Cannelton, Ind., treasurer, and H. P. Clemens, Cannelton, secretary and general manager, completed and put in operation in 1909 the present, very complete sewer pipe plant.

This plant consists of a main dry room, built of brick, three stories in height; a four-story machine room and a boiler and engine room. Twelve kilns, 30 feet in diameter, of the down-draft type, provide for the firing. In the dry room there is a floor space of 46,000 square feet; the steam dryer system being used exclusively, the ample space allowing of the continuous operation of 12 kilns.

The power plant is equipped with two 150-horsepower boilers, one Brownell 225-horsepower engine, one press, one dry pan, two wet pans (all of the Stevenson make), one power elevator, and one Taplin-Rice gravity elevator.

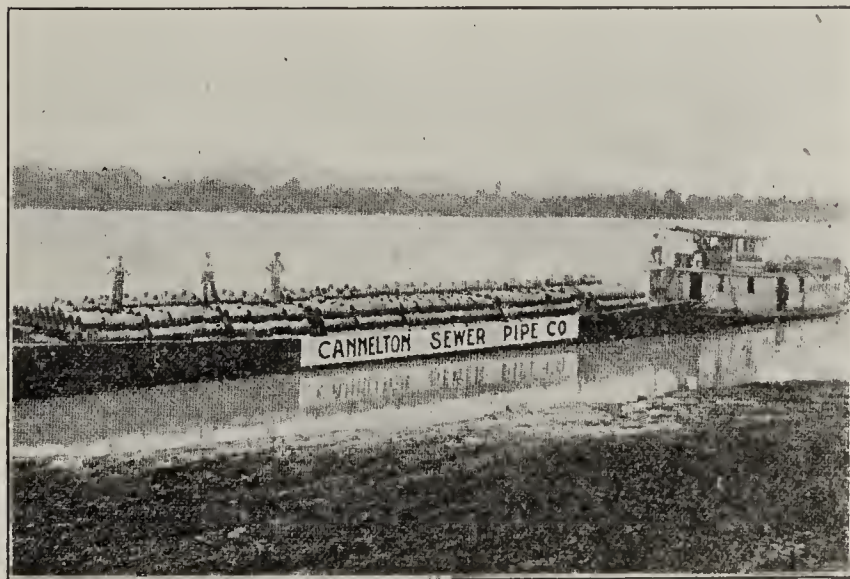
The plant has operated continuously since its completion with the exception of three weeks, beginning January 1, 1911, when it was necessary to shut down to put in additional machinery. The product includes salt-glazed sewer pipe, wall coping, stove pipe and flue liners. Sewer pipe is made in sizes varying from 3 to 24 in., both in the standard and double strength, and fire clay is used exclusively in their manufacture. The normal capacity of the plant is 100 car loads per month.

The shipping facilities are very complete, the yards being equipped with two switches, accommodating 19 cars, and conveniently located for the rapid handling of the

product. The accompanying illustration shows the method of river transportation in low-water season, the barge shown being loaded with eight cars of 15-inch pipe, consigned to Hartford, Ky. The product is marketed in Cincinnati, Indianapolis, Louisville, Evansville, Nashville, Memphis and New Orleans, and in the states of Oklahoma, Arkansas, Montana, South Dakota, Texas and Old Mexico.

The quality of the pipe furnished by the company has been tested by one of the most exacting sewer commissions, namely, that of Louisville, Ky. In connection with the construction of the \$4,000,000 sewer system in that city certain specifications were insisted upon, and tests made under the personal direction of the inspector of materials. The results of these tests are given herewith.

The reason for the exceptional strength of the Cannelton product is the fact that the clay of which it is



Shipping Sewer Pipe on Ohio River.

composed possesses qualities practically ideal in proper constituents. Combined with this is the fact that the long experience, over fifty years, in manufacturing stoneware products, has reduced the proper combination of material and the proper firing to a scientific basis, practical, efficient and having nothing of the nature of experimentation at the expense of the user.

The main offices of the company are located at Cannelton, Ind., and the territory west of the Mississippi river is looked after by the St. Louis Clay Products Co.

GOOD DRAIN TILE TALK.

The following are some reasons why the farmers and landscape engineers should underdrain the low meadow and wet soggy lands:

To make the soil more porous, and a better absorbent of ammoniacal carbonic acid gases, which will enable the farmer to start his plow earlier in the spring, say from ten days to two weeks. The land will also be warmer and earlier in both the spring and fall, and in the summer he can work the land immediately after a heavy rain without danger of injury.

It will also improve the flavor of all kinds of fruits, especially the peach and pear, as well as improve the quality of potatoes, and underdraining will enable the fertilizers to produce the best results, causing a wonderful increase in the yield of grass and corn.

The use of drain tile for the purpose of underdraining land, by forming subterranean channels to conduct away rapidly the excess of water, which accumulates on the low lands, and to prevent the flooding of crops by heavy storms, has been known for many years in all the foreign countries, and the enormous consumption of these tiles for this purpose, together with the results attained are so commonly known that it seems a repetition to call attention to them.

What we want to convey to the "American farmer" is the value of a method of this kind, which will enlarge his profits by increasing his crops and making unproductive fields productive, as well as protecting the health of the consumer by preventing the accumulation of stagnant water. All he has to do is to look around him and he will see that the successful farmer is the one who is underdraining his lands, the increase in his crops paying for same within three years. Is this matter not worth the farmer's consideration?

CONDITIONS IN THE TRADE.

The A. C. Ochs Brick & Tile Co., manufacturers of clay products at Springfield, Minn., write that their sales on drain tile during the past season have fallen off by 50 per cent, due entirely to the excessive drought experienced in their territory. They find that within the last month, however, that the tile business has picked up considerably, and there is every reason to believe that under ordinary circumstances the drain tile business will be far greater than has been experienced heretofore, as the people have become more and more enlightened along this line, and are now firm believers in its advantages.

The Davenport (Ia.) Brick & Tile Co. state: "We have not sold one-third the amount of drain tile as in the previous year, owing to the weather conditions, but with the extra effort that is being made through the Western Tile Drainage Bureau, by C. B. Platt, the lively secretary, we believe it will bring good results. Very likely we brick people have been too indifferent, but it strikes me that there is an awakening, and I am pleased to see such people as C. B. Platt, C. W. Lansing and J. Parker Fiske are wakening them up.

"But to come back to the drainage affair, we do believe that Mr. Platt's idea is a grand thing, and a great one, that is, of course, that the brick and tile manufacturers will have to bring in more financial support, and then the booklets, leaflets and the farmer's papers will certainly induce the up-to-date farmer to buy more drain tile."

The National Brick & Sand Co., a newly organized Ohio corporation, has purchased a brick plant, formerly operated by the Eggers Brick Co.

ANCIENT DRAINAGE METHODS.

The earliest mention of artificial drainage is found in the writings of Columella, who lived in the first century of the Christian era. The following tells of some early efforts at drainage. We know of two kinds of ditches—those wide open and those which are hidden. For the hidden ditches one will dig trenches three feet deep, which shall be filled with small pebbles or pure gravel, and then the whole will be covered with the earth taken from the trench. If there be neither stones or gravel, the fascines or bundles of branches tied together may be placed in the trench so as to fill the cavity." Apparently the old Roman farmers either did not comprehend the great value of underdrainage or else were sadly lacking in enterprise, as witness the Pontine marshes, with their great fertility, producing only noxious vapors and poisonous insects all through these hundreds of years. It is certain that the Romans used clay pipe as water conduits, and there is some evidence that tiles were used for drainage. During the troublous times that marked the decline and fall of the Roman empire, agriculture made but little progress and the art of drainage was probably forgotten.—Proceedings of Iowa State Drainage Association.

SEVENTEENTH CENTURY DRAINAGE.

In old Flanders, in the northwest corner of France, was located the convent of Maubenge with its famous "Magic Garden." It is claimed that this garden was drained by tile as early as the beginning of the seventeenth century. Klippart, in his second edition of "Land Drainage" publishes a letter from a Frenchman, who claimed to have in his possession two drain pipes taken from drains laid in the above named garden not later than the year 1620, which so thoroughly drained the garden that it was noted for its wonderful productiveness. On the strength of the claims made for this celebrated garden, the French claim that they were the first to use tile for artificial drainage.

A VETERAN ESTABLISHMENT.

The plant of Jno. H. Jackson at Albany, N. Y., is one of the "old time" institutions of the state. It was built in 1852, since which time it has been enlarged and added to at various times and is conveniently situated near the railroad and shipping docks. The lands comprise ten acres underlaid with blue and yellow clay, the blue clay being underneath and the yellow on top. It is easily procured near the factory and is hauled to the plant in dump wagons, where it is usually weathered for some time but this is not considered actually necessary.

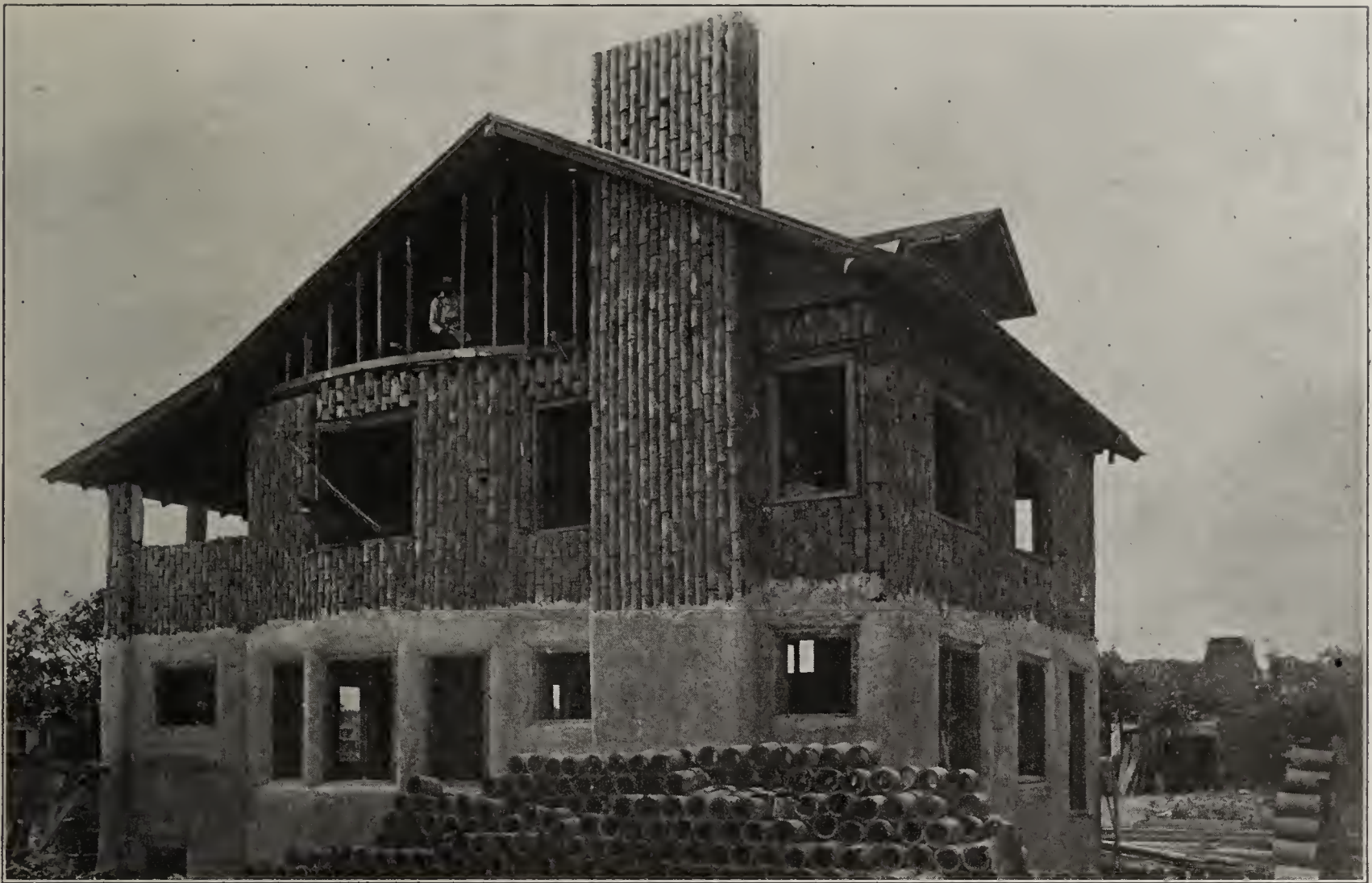
The buildings comprise several dry sheds and two engine and machine rooms. The machinery includes a Brewer tile machine and American tile and brick machine and a hand cutting outfit.

The clay is tempered partly by a Newell crusher and partly in the Brewer machine. The dryer is the hot air type built of brick and steel by the Green Fuel Economizer Co. About 36 hours are required for drying, after which the goods are set on end about 15 high in round down-draft kilns. Soft coal is used for water smoking and burning, about six tons being required to burn a kiln. The kiln floors are of the open type.

Two corliss 100-h. p. engines and two 100-h. p. boilers comprise the power equipment.

The plant is operated continuously during the year and drain tile is the only product manufactured.

A fire at the plant of the C. P. Merwin Brick Co., Berlin, Conn., caused a damage amounting to about \$2,500.



Example of Construction with Van Wie Interlocking Tile.

DRAIN TILE NOTES.

The tile factory of Shaw & Wilkinson at Bement, Ill., was destroyed by fire recently, caused by the explosion of a lantern left in the engine room. A kerosene tank ignited and exploded, causing a fire resulting in a loss of \$2,000 with no insurance.

The Marshalltown (Ia.) Sewer Pipe & Tile Co., which is rehabilitating the former plant of the Red Wing Union Stoneware Co., has incorporated at St. Paul, Minn., with a capital stock of \$200,000. The main business of the corporation will be the manufacture of sewer pipe and tile.

Rumors are current that the plant of the Pacific Sewer Pipe Works, whose factory is at Terra Cotta, Cal., will be reopened. Several large sewer pipe orders are spoken of as in prospect.

The Lee & Casey tile factory at New Richmond, Ind., has been sold to the M. J. Lee Drain Tile Co. at Colfax, Ind., where the plant will be moved.

The Springfield (Ill.) Drain Tile Co. is pushing work on the construction of their new plant, near Mildred Park. The plant will be of brick, four stories high, and will represent a total investment of \$50,000. The nominal capitalization of the company is \$300,000, of which over half has been paid in, the balance to be paid as needed. About one million brick will be required for building the plants and kilns and it is hoped the plant will be ready for operation about Oct. 1st.

The C. A. Nelson Drain Tile Co. was recently organized, at Beaver Dam, O., by C. A. Nelson and others, with a capacity of \$10,000.

Robert Patterson, chief engineer of the Robinson Clay Products Co., of Akron, O., has been appointed district examiner of stationary engineers to succeed W. R. Bartram, whose term has expired.

At Davenport, Okla., where last year was a cornfield, now stands a new up-to-date clay plant. The buildings are of a most substantial character and the machinery is of

the very best, having been made by Steele & Son of Statesville, N. C. A 35-foot well furnishes an abundant supply of water and natural gas is piped to the yard, assuring fuel for burning the ware.

SILO AT STATE FAIR.

The Red River Valley Brick Corporation, of Grand Forks, N. D., are enjoying a good business in supplying the farmers with brick silos and have purchased the right



Model silo constructed by the Red River Brick Corporation, displayed at State Fair, Grand Forks, N. D.

for North Dakota and Polk County, Minn., from Mr. Gwiner, of Waupaca, Wis., who owns the patent right.

The Red River Valley Co. erected a model silo shown in accompanying illustration 12x13 ft. on the State Fair Ground at Grand Forks, N. D., and report that it caused much favorable comment from many visitors at the fair.

THE INDUSTRY IN CANADA.

The following from the report of the Canadian Bureau of Mines, gives some interesting news concerning the clay industry in Canada:

The demand for brick is rapidly increasing with the growth of cities, in which fire-proof building construction is demanded, but the manufacture does not seem to have kept pace with the demand, as large importations of brick have been made from Puget Sound points. A special report by the Provincial Assayer, published in the 1908 Report, shows that there are unlimited clay deposits available, but that the brickyards of the Province are, for the most part, worked on rather primitive lines, and that the price of even the cheapest class of red brick is such as to invite serious competition from concrete in building operations. The actual figures of production cannot be obtained from the manufacturers for publication, but, as nearly as can be estimated, the number of red brick produced in the Province during the past year was about 40,000,000.

The fire brick plant at Comox has not been in operation. The Vancouver Fire-clay Co.'s plant at Clayburn has been somewhat remodeled, and is now producing a brick of much higher class and of more uniform grade. The deposits consist of clays of various qualities—described in Report of 1908—and the product varies from a superior quality of common or building brick up to a good quality fire-brick and fire-tile. The Clayburn Co. manufactured last year over \$35,000 worth of fire-brick, and over \$105,000 worth of pressed front brick, as well as other products.

The B. C. Pottery Co. at Victoria West derives its supply of fire-clay chiefly from the coal mines of the Canadian Collieries Co., and manufactures drain and sewer pipe, chimney tiles, etc., the sales for the year being chiefly of drain pipe, and amounting to over \$125,000. The company has recently opened up a shale quarry on the West Coast of Vancouver Island, the product of which can be and is used in the manufacture of sewer pipe.

The only company manufacturing cement in the Province is the Vancouver Portland Cement Co., with works at Tod inlet, on the Saanich arm, about twelve miles from Victoria. The capacity of these works at present is about 300,000 barrels a year, and this past year the company manufactured over 260,000 barrels of cement, valued in the neighborhood of \$395,000.

PRODUCTION OF FULLER'S EARTH.

"The Production of Fuller's Earth," by Jefferson Middleton, of the United States Geological Survey, has just been published as an advance chapter from "Mineral Resources of the United States, 1910."

The fuller's earth resources of the United States, says Mr. Middleton, have attracted considerable attention for several years because of the increasing demand for this material for use as a clarifying agent for mineral and vegetable oils. The original use from which it derives its name, the fulling of cloth, is now of minor importance.

An Accidental Discovery.

For a great many years fuller's earth was imported from England, the only known source of supply, but in 1893 it was by accident discovered in this country. At Quincy, Fla., an effort was made, without success, to burn brick on the property of the Owl Cigar Co. An Alsatian cigar maker employed by the company called attention to the close resemblance of this clay to the German fuller's earth. As a result of this suggestion, the clay was tested and found to be fuller's earth, and the industry was developed. This discovery caused considerable excitement, and supposed deposits of fuller's earth were reported

from a number of states. The material in most of these deposits, however, was found to be of no value as fuller's earth. Since the discovery, Florida has been the leading state in production. During the early history of the industry fuller's earth was produced in only two or three states. In 1897 to 1899 it was reported from Florida, Colorado and New York, with a very small production from Utah; in 1901, Arkansas was added to the list. From 1904 to 1907, Arkansas was the second largest producer. Shortly after its discovery in Florida, fuller's earth was found in Georgia, but Georgia did not appear as a producer until 1907, when it was the third largest producing state; it ranked second in 1909 and 1910. In 1904, Alabama and Massachusetts reported production, in 1907 South Carolina and Texas first appeared, and in 1909 California entered the list.

Principal Use.

The principal use of fuller's earth in this country is in bleaching, clarifying, or filtering of fats, greases, and oils. The common practice with mineral oils is to dry the earth carefully after it has been finely ground, and run it into long cylinders, through which the crude black mineral oils are allowed to percolate very slowly. As a result the oil that first comes out is perfectly water white and much thinner than that which follows. The oil is allowed to continue percolating through the earth until the color reaches a certain maximum shade. Then the fuller's earth itself is clarified by a steaming process and used over again. With vegetable oils, however, the process is radically different. The oil is heated beyond the boiling point of water in large tanks, from 5 to 10 per cent of its weight of fuller's earth is added, and the mixture is vigorously stirred and then filtered off through bag filters. The coloring matter remains with the earth, the filtered oil being of a very pale straw color. American fuller's earths are better adapted than the English earths for use on mineral oils, but the English earths are superior for the treatment of fats and vegetable oils. In clarifying vegetable and animal fats with American earths a more or less disagreeable taste is left—just why has never been determined.

To show the growth of the American industry it is only necessary to state that from 6,900 tons in 1895 the production increased to 33,486 tons in 1909. This was the maximum, the output for 1910 being 664 tons less. Florida was the leading producing state in 1910, furnishing 57.38 per cent of the total output, or 18,832 short tons. The other producing states, named in the order of their rank in output and value in 1910, were Georgia, Arkansas, Texas, California, Massachusetts, South Carolina, and Colorado.

A copy of Mr. Middleton's report may be obtained on application to the Director of the Geological Survey at Washington, D. C.

WILL MAKE FACE BRICK.

The Midland Brick Co., Peru, Kan., have discovered that their material will make a very fine dark chocolate face brick, and are preparing to make this product exclusively, and have bought cars, represses, etc., from the Bonnot Co. They will be in operation within thirty days.

NEW CALIFORNIA ENTERPRISE.

The Hyrastone & Tile Co. has been incorporated at Los Angeles, Cal., with a capital stock of \$75,000, of which \$5,000 has been subscribed. The directors are M. M. Mertens, E. A. Murchie, E. C. Mertens, H. B. Bayless and Herbert McLean.



EMPLOYER'S DUTY IN MINING SHALE.

It is the duty of a brick-making company which mines shale by means of a steam shovel, the Supreme Court of Kansas holds, in *Griffin vs. Fredonia Brick Co.*, 114 Pacific Reporter, 217, to use reasonable care to put and keep the rough bank, produced by the operation of the steam shovel, in a condition which will render the work of employes, necessarily performed in proximity to the bank, reasonably safe from all caving, naturally to be anticipated in consequence of the excavation.

When it is said that workmen assume the risk of injury from the spontaneous caving of banks, the falling of shale, earth and rock loosened by natural agencies, and other perils inherent to work about a shale pit, the contingencies referred to are those which arise after the master has used reasonable diligence to make the place comparatively safe.

In this case a minor, employed to ride cars down into the pit, was killed by a mass of clay and rock which fell from the bank just as the car in which he was riding approached the steam shovel. An employe charged with the duty of looking after the bank testified that, after noon of the day preceding the casualty, he went to the top and pushed down, as he thought, whatever loose stuff he could, that seemed likely to fall. His tools were a pinch bar and a big gas pipe, sharpened. He worked until he got tired, then went back into the pit and did not return to the top of the bank. While engaged in this work he saw a boulder or lump sticking out from the wall, at a place some three or four feet below the top, while he made no further inspection of the wall, he says he says he thought the wall was safe, and he worked under the projection after he returned to the pit. But, while he made no further inspection of the wall, he says he "watched it close." It was this projection which fell. It contained a rock weighing probably 100 pounds which struck the car boy on the head.

There was a judgment for the defendant company in the action brought to recover damages for the boy's death, but the court reverses it and remands the case for a new trial, saying that from the evidence the jury might well have concluded that the lump or boulder was a menace from the time the steam shovel left it projecting from the wall; that the employe charged with the duty of looking after the bank was cognizant of the danger, made an insufficient attempt to remove it, and continued in a state of apprehension concerning it; that he did not display reasonable prudence in merely watching from the bottom of the pit and taking chances, as he did; that he ought to have made a further attempt with appropriate tools to throw the projection down; and that in any event he should have gone to the top the next morning to see if cracks, the usual premonition of a caving, had appeared.

SALT GLAZING HINTS.

A prominent Nebraska clay manufacturer offers the following suggestions in regard to salt glazing:

"Brick must not be set light below or above benches. To my notion there is only one way of setting a kiln for salt glazing brick. Salt, when properly applied, will not run courses together. The first application must be made

when heat is 1490 deg. C., the quantity to be one No. 2 grade shovelful, not too full, of rock salt, which must be clean and not in lumps. The second application is made when the fires are in good shape again, which means a clear heat which must continue so until results are secured.

"Do not use any salt which has been used in curing meat. I will give four ways of using salt for glazing and if those do not do the work then it is my opinion that the clay will not glaze. First, rock salt. Second, table salt. Third, rock salt and C. P. potash powder in the proportions of 67 lbs. and 33 lbs. respectively, form salt. Fourth, rock salt and C. P. amoniac soda powder, 78 lb.-22lb. each form salt. If rock salt will not work with these chemicals then use the table salt instead. Proposition, table salt 72 lb., potash 28 lb.; table salt 83 lb., soda 17 lb. If no dry wood can be had and you use coal you must have steam which must be turned on at once after thorough salting; 1-in. pipe reduced to 1/4-in. pipe in ash pit."

Another manufacturer gives the following method of producing a successful glaze on clay ware:

"Concerning the salt glazing of brick, the brick should not be set in tight courses above the bench. The salt does not tend to run the brick together. As many applications of salt should be supplied as are necessary, this being determined by trial. People who do not know how put in seven. People who do know are satisfied with three or four. About one shovelful of salt should be placed at each charge, spreading evenly over a clear fire and shutting everything up tight.

"As regards rock salt, it is the best, but any common salt would do. As regards the salt used on meat it would be all right to use that if there is not too much meat in it. The quantity of impurities in the salt only diminishes the efficiency of the salt, but I cannot see that the salt vapor would act in any different way owing to the presence of a certain amount of grease in the salt. This, however, could only be determined by trial."

OLD ROMAN BRICK.

When the preparations for rebuilding the Campanile in Venice were undertaken the archaeologists were afforded an opportunity to make some interesting studies of the bricks, says *Harper's Weekly*. It was found that they had been used in arches, fortifications, the tops of walls, and in other ways before they were built into the Campanile, and that they were not Venetian, but Roman brick.

These ancient brick were made in courses, for in many the layers could be seen undisturbed. It is said that brick made this way can bear a greater weight than modern brick. The brick examined were of the first century. One of them bore the imprint of a horseshoe, which may prove that Romans used a horseshoe like ours, although it is generally believed that their horseshoes were strapped on, not nailed.

The Mount Holly Progressive Club has succeeded in buying the brick plant of George D. Jenkins Brick Co. The plant is finished and ready for business with a capacity of 50,000 brick per day.



LEGAL DECISION AS TO TESTING.

A notice inviting bids for paving provided that the work was to be done according to certain plans and specifications. The specifications indicated the character of the material to be used, and the test to which the brick were to be subjected to determine whether or not they complied with the provisions of the contract, and it provided that these tests should be made by the city engineer, at any time he desired during the progress of the work, and if the brick did not comply with the tests they were to be rejected and other brick substituted in their stead.

The specifications also provided that each bidder should deposit with his bid 10 samples of the kind of brick upon which his bid was based, such samples to be labeled, showing the commercial name of the brick or block. This, however, the United States circuit court holds, *Turner vs. City of Fremont*, 159 Federal Reporter, 221, did not do away with the express provision that the brick should be from time to time, as the city engineer desired, subject to the tests provided by the specifications.

Moreover, the statement in the bid of the plaintiff that he proposed to use "Capital" brick, as per samples submitted, was merely a statement that the samples which he submitted were the samples asked for by the specifications, and was not intended as a statement that the brick with which he proposed to do the work, if according to sample, should not be required to undergo the test expressly provided for in the specifications. This holding gives full force and effect to each provision of the contract.

If the specifications had not required the bidders to present samples, and the plaintiff, having presented samples with his bid with the statement that he proposed to use brick as per samples, his argument that such provision was to be a substitute for the test provision would have some force. But considering the fact that the specifications required samples to be submitted with the commercial name thereof upon which the bidder's bid was based, together with the tests which might be made from time to time by the city engineer in determining whether the brick used complied with the specifications, it seems to the court clear that the statement by the plaintiff that he purposed to use brick, the commercial name of which was "Capital," was only a statement that the samples were the samples called for by the specifications. The contract was to be let to the lowest responsible bidder.

The object of the samples, and the commercial name thereof, was to enable the authorities to investigate, ascertain the probabilities of the contractor being able to procure brick of that commercial name in sufficient quantities to fulfill the contract, and whether the brick of that commercial name would generally comply with the specifications. It was not intended, and could not have been understood by the plaintiff in making his bid, that the quality of the samples alone was to determine the quality of the brick to be used in the construction of the work, unaided by the tests provided for in the specifications.

The contract to furnish the brick for the Crooked Run, Meesport, Pa., was awarded to the Pennsylvania Clay Co., at \$14.70 per thousand.

BUSY SEASON IN OHIO.

Paving brick manufacturers in the Ohio territory are exceptionally busy, this being the result of a rush of municipal improvement which is now actively under way. It is related in financial circles that more municipal bonds have been sold this year in Ohio for sewer and street improvements than for ten years, and this has been of vast benefit to the brick and sewer pipe manufacturers.

EXTENSIVE PAVING CONTRACTS.

Washington county, Pa., which adjoins Allegheny county on the southwest, is doing the largest amount of country paved road work of any county in the state this season. Bids were received by the County Comptroller at Washington, Pa., up to July 12 for ten large jobs, ranging from 800 square yards up to 31,650 square yards. The aggregate paving in all these jobs amounted to 161,650 square yards, and only vitrified paving brick or block were specified.

CLEVELAND PROGRESS.

The city of Cleveland has started letting contracts on thirty miles of brick pavements, which are to cost \$1,200,000. For sewers the city will spend \$550,000, a goodly portion of which will go to the makers of clay products.

PAVERS STRIKE IN CUBA.

Municipal work at Havana, Cuba, has been much delayed by the strike of the workmen engaged in laying sewers and paving streets despite the efforts of contractors to resume work. Several small gangs were engaged, but a sufficient number of workmen could not be found to make any progress with the work.

CONTRACT LANDED.

The contract for furnishing 50,000 paving block was awarded to L. D. Mullin, of Boston, agent for the Bessemer block made at Youngstown, O. The bid was \$30 per thousand, the total amounting to \$1,320 for the lot.

WHY WILL THEY USE IT?

A Wisconsin newspaper states that the work of laying the cement foundation for the Third street paving at Wausau, Wis., was stopped; it having been found that the cement being used was of an inferior grade; in fact, it was worthless. A teamster drove a wagon over the street where the cement was supposed to be firmly set and the wagon wheels cut through.

CANNOT WITHSTAND HEAT.

The heat caused the concrete paving, at York, Pa., to expand and bulge up in the center so badly that it was necessary to relay the pavement.

BRICK GUTTERS.

The streets of Atlantic City have brick gutters, which add to the appearance as well as the durability of the pavement.



PERTINENT COMMENTS ON PIPE PRICES.

We are pleased to note the interest which has been aroused among sewer pipe manufacturers by the various articles, which have appeared in "Brick and Clay Record" from time to time, on the subject of "Pipe Prices."

The president of one of the largest independent sewer pipe companies in Ohio, makes the following pertinent comments on the present situation and causes for prevailing low prices:

Editor of "Brick and Clay Record:" I have read your journal for several years with great interest, and as each number reaches our office I see improvement, marked improvement, and it is a pleasure to note this improvement for you surely have the best journal in the clay industry.

Your August number reached us this morning and among the many articles of interest, I note those under the heading "Sewer Pipe News," especially the first article "More About Pipe Prices" and "Sewer Pipe Prices," the latter, comments by Mr. Anton Vogt.

In the first article, the "Mysterious Stranger," from Philadelphia, suggests that the manufacturers adopt a one-price system and stick to it. I wonder how much acquaintance this "Mysterious Stranger" has among the manufacturers of sewer pipe? I have been in the business practically all my life, am still connected with it in a way and have had more or less experience with the manufacturers and it has been worth quite a bit in some ways and in other ways not worth much, if anything. It has taught me that there are more men connected with the sewer pipe business, who have absolutely no regard for their word, than can be found in any other line of manufacturing and to this can be attributed the deplorable condition of the sewer pipe market. I have known supposedly reputable manufacturers to sign their names to a price agreement and walk right out from the meeting room to the telegraph office, where they would wire their best customers that prices would advance to a certain discount on a certain date and to place orders in advance.

Mysterious Stranger writes: "The greatest trouble the manufacturers have to contend with is their agents, who when they learn the manufacturers are about to advance the discount, send in a number of orders subject to future delivery." Let me ask this question: Who advises the agents that there will be an advance on a certain date? I realize the fact that many of the agents are the kind, who can see only their own positions, I also realize the fact that if the manufacturers had the right kind of backbone, they could tell the agents "where to head in at." The agents are not all at fault. You can go among them, talk with them and they will almost to a man tell you they would much rather see prices stiff. Whose fault is it that they are not stiff?

Our concern has often heard jobbers remark, when advised of an increase in prices: "Another joke being perpetrated by the sewer pipe manufacturers." And to many who want living prices, this is a "truth."

Many attempts have been made during the present year to advance the selling price and each time has failure been the result. After having watched the efforts of the manufacturers to increase prices and maintain them, I have come to the conclusion that when advances are made the manufacturer makes the advance too great. Just imagine an increase of 60% in the price of an article. Is it any wonder the prices are not maintained? Too much of a chance to cut, too much of an inducement to the unscrupulous manufacturer to offer his neighboring manufacturer's best dealer, an inducement to change the base of his supplies.

We have gone into the matter of "cost" very thoroughly, and find to our entire satisfaction that sewer pipe can be made and sold at 87½% and show profit, if the management of the plant is up-to-date. If a plant cannot show a

profit, at this figure, there had better be a change in the management. Don't blame your mismanagement on the poor jobber or dealer. They are not to blame for your poor management.

I have no intention of criticising any one management, but I know of instances where money was lost by putting in charge of plants, men who knew absolutely nothing about the clay business. This is being done right now by one concern that I have in mind and it is no wonder the company cannot show a profit for their stockholders. There are men who have taken hold of plants without any practical knowledge of the business and have made a success but there are few such men in the clay industry. I am not "knocking," I don't want a position managing any plant, but I do want the blame for the present deplorable condition of the market to rest where it rightfully belongs—on the shoulders of the manufacturers themselves. Let them wake up to their own interests, set their price at a reasonable figure, not try to get rich in one year, live up to their agreements, verbal or written, and there will be an end to the ruinous prices now being made by everyone.

Why cannot the clay manufacturers get together and stay together as do the steel manufacturers? They have as much invested in proportion and therefore as much at stake, yet notwithstanding this fact they seem to take delight in entering into an agreement, if schedules of prices as issued during the past year or two can be called agreements, then, turning right around and cutting prices. I don't mean to lend the impression that all the manufacturers are alike, there are some men in the business, who are worthy of trust but what good will a dozen men on whom you can depend do, if two or three are not worthy of trust. The two or three can and do make the price.

During the latter part of last year, if memory serves correctly, one of the largest manufacturers sent broadcast, circular letters naming a flat price of 90% at factory on sewer pipe and 92% on flue lining when he never saw the time when he could make the goods at that figure. Nor could his reserve fund stand such work very long. Would not the stockholders be justified in taking steps for their salvation?

In many lines of trade, during the dull seasons, prices are frequently cut to stimulate business, encourage the placing of orders: this is not true in the clay business. During the busiest times clay manufacturers will cut prices, if they think their next door neighbor is getting a few more orders than they are.

There is no desire on the part of the writer to open a controversy on this question—simply a desire to place the blame for present conditions where it rightfully belongs. There will likely be exceptions taken to this article but the chances are the only one to take exception will be the fellow whose shoe pinches.

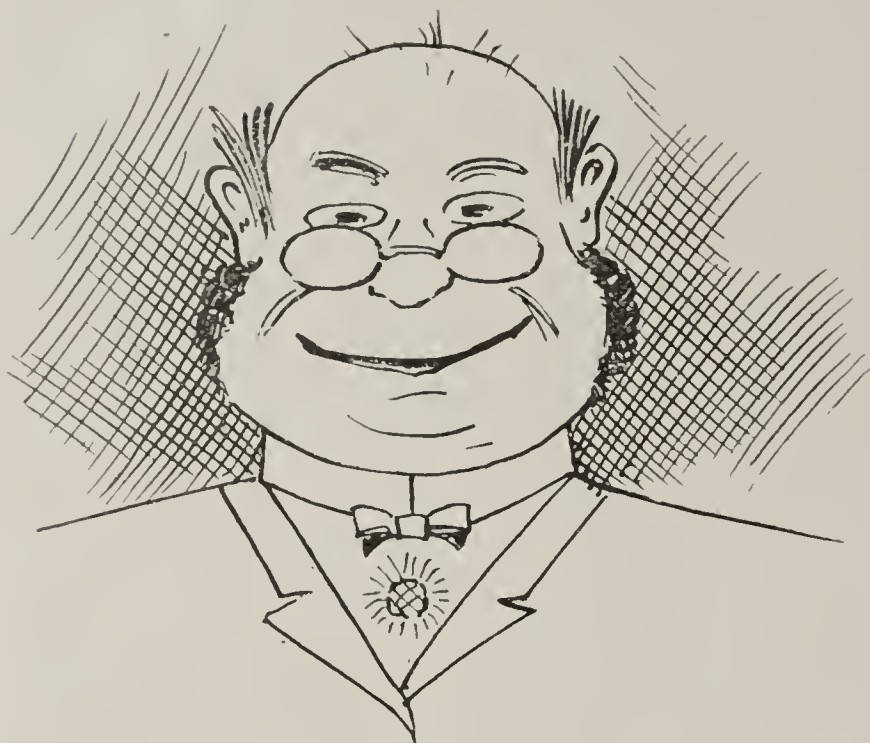
BUSINESS GOOD IN KENTUCKY.

Our Louisville correspondent states that while calling on M. J. Bannon, at the offices of the Kentucky Vitrified Brick Co. and the Bannon Sewer Pipe Works, Mr. Bannon stated that sewer pipe business is as good now as it ever was at this time of the year.

The Smithland Tile Co. commenced operations a short time ago at Smithland, Ky., and are producing tile. The plant was established through the discovery of a deposit of a suitable quality of material near the Kentucky town.

Henry Derrickson, and others of Clay City, Ky., recently equipped and started in operation a large sand brick and tile plant, near that place. The new establishment is reported to be running to capacity limit and is increasing its tile department steadily.

One of the features of good roads work throughout Kentucky, which is now being pushed from one section of the state to the other, is that a large amount of clay culverts and sewer pipe will be consumed in the completion of the fine highways which are to make the Bluegrass famous. Louisville brick and tile manufacturers are very much interested in the good roads campaign, for a majority of them handle the kindred lines of clay products and there is lots of business in evidence in various portions of the state. The Lincoln Way, which is now in course of construction from Louisville to Hodgenville, Ky., to the birth place of Honest Old Abe, will consume a considerable quantity of culvert and drain tile.



The "Mysterious Stranger from Philadelphia" as sketched by himself, awaiting arrival of "Brick and Clay Record" for August 15th. (Oh, You "Record"!)

LIVE SEWER PIPE PLANT.

While some clay manufacturers deplore dull times and lack of orders other firms are enjoying their usual quota of orders, despite the exceptionally dry season. One of the many prosperous clay plants, in Iowa, is that of the Lehigh Sewer Pipe & Tile Company at Fort Dodge, where the company owns 140 acres of land situated near the C. G. W. and F. D. D. M. & Southern Railways.

The main factory buildings are a dryer, 80 by 250 feet and a machinery building 60x250 feet. The clay used is a blue shale, which is procured, near at hand and transported in Atlas side dump cars to the plant. The clay is not stored for any length of time, except about 3,000 tons which is kept on hand for reserve only. The clay is ground in 2 29-ft. Taplin-Rice dry pans, with a capacity of 250 tons daily. After being screened through Taplin-Rice screens the clay is tempered in wet pans. The dryer is heated by steam and hot air from the kilns, from four to ten days being required to complete the drying process. The kiln battery is composed of 15 28-ft. down draft kilns.

The power plant is well equipped with one 125 h. p. engine and four 100 h. p. boilers made by the Atlas Company of Indianapolis, Ind.

The plant was established in 1908 and is kept in operation continuously throughout the year. The famous "Diamond Brand" sewer pipe, with wall coping, drain tile and flue lining, comprise the only products manufactured.

The officers of this company are: E. J. Breen, presi-

dent and general manger; J. D. Spalding, vice-president; George A. Lyon, secretary; Chas. Larrabee, treasurer, and W. U. Turpin, manager sales and traffic department.

Mr. Breen, the president, informs us that they have been doing a nice business this year, and that everything looks good for the future.

BRIGHT OUTLOOK AT PHILADELPHIA.

A clay manufacturer of Philadelphia writes us of trade conditions there, as follows:

"The building material trade in Philadelphia, and the immediate vicinity, is rather quiet, at the present time, but the outlook for the future is very bright. Quite a few of our leading builders, as well as the city of Philadelphia itself, have awarded large contracts for the opening, paving and sewerage of streets, and the Philadelphia Reading Railroad is building a new station at Logan, one of the northern suburbs of the city, which will cost in the neighborhood of \$59,000. There are also many first-class operations under consideration here, at this time, and this work together with the above mentioned should create a demand in the near future, which will keep us hustling to supply."

NO DECREASE IN BUSINESS.

The Wm. E. Dee Clay Product Co., with offices in Chicago and plant at Mecca, Ind., has been fortunate enough, as yet, to escape the lull experienced by some others. This company reports that there has been no decrease in orders up to this time. Orders with them have been as active as could be expected, and in fact there has been even a better call than the situation seemed to warrant. In the coming months, it will be no surprise to the company to see some decrease in business; in fact, this has been anticipated but has as yet failed to arrive.

The cartoons appearing on this page were executed by our friend, from Philadelphia, demonstrating that he is clever in using crayon as well as in the use of the pen. We regret that, through lack of space, several other gems of art were crowded out.



Pen Sketch of a Delegate at the meeting of the Sewer Pipe Stockholders.

"Didn't you tell me last summer that you were going to build a concrete house?" asks Miggles.

"Yes," answers Gluggins; "but after looking over the architect's estimates I left the house in the abstract."—Life.

SAND LIME DEPARTMENT

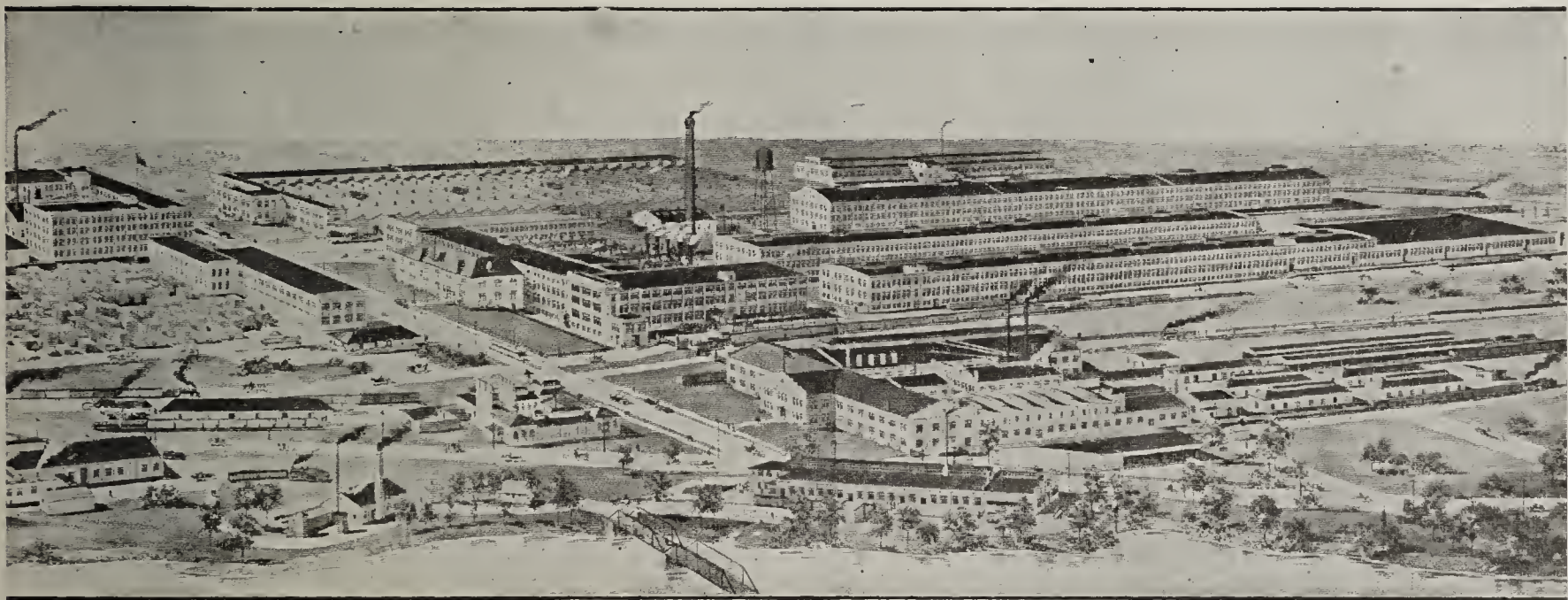
GOLD BY-PRODUCT OF BRICK PLANT.

The factory of the Sacramento (Cal.) Sandstone Brick Co. is located at the mouth of the American River, a branch of the Sacramento River, and the sand used is taken from the river bottom. The American River is not a navigable stream and during the summer months there is practically no water to contend with and a smooth, white bed of excellent sand is available, nearly the entire width of the river, approximately 1,000 feet across.

In the rainy season and when the snow melts in the high Sierras, the water in this river rises twenty to thirty feet with a very swift current. It is during these months that the sand supply is brought down from far up in the mountains and deposited, by the action of meeting the waters of the Sacramento River coming from a different direction, at the mouth of the American River.

In studying these conditions Manager G. W. Bostwick of the Sacramento Sandstone Brick Co. concluded the gold values in the American River sand were worth investigating, so he at once arranged to have a series of tests made. These were made by the assay process, by actual mill-tests and by panning. Every test showed values ranging from \$2.01 up to as high as \$5.20 to each ton of sand. Naturally the proposition became interesting to the stock-holders of the brick company and machinery is now being installed which will supply the finely ground sand needed to manufacture high class brick and at the same time save the gold values with but very little additional cost.

The plan is to pump the sand from the river bottom, and down from quite a depth where the greater values are found, direct to the grinding machine which is somewhat on the order of the regulation wet pan with the



Portion of the Buick Automobile Factories, Flint, Mich., covering 60 acres, in the Construction of which 25,000,000 Sand-lime Brick were Used.

The American River and its tributaries drain the greatest gold sections in California and many of the leading mines of the state are located close to the banks of these rivers and their operations convey the tailings to the edges of the streams. These tailings contain more or less value in fine free gold, which is washed down the river with the sand by the torrents, also other fine gold is carried down as the result of natural decomposition of the rocks in the mountains. This process has been going on for ages and it is a well known fact that much of the ground around Sacramento and vicinity is rich in gold values.

At Folsom, sixteen miles up the American River from Sacramento, many square miles of valuable ground have been overturned by the dredgers of the Natomas Consolidated Companies. These dredgers work to a depth of 15 to 25 ft. and each is a complete gold washing plant in itself. Ground with orchards and vineyards on, worth \$1,000 per acre is being worked in this manner by a dozen or more of these dredgers which cost approximately \$150,000 to \$200,000 each to build.

exception that quick-silver is used in this machine for amalgamation. The sand will be ground to the desired fineness for brick making and every week or two the quick-silver will be drawn off by simply pulling out a plug, then the machine is thoroughly cleaned and the gold obtained will be purely a by-product. It is expected that \$2.00 in gold will be saved in this way from each and every ton of sand worked up into brick and artificial stone.

MONTHLY BULLETIN.

We have received a copy of the "Monthly Bulletin" issued by the American Association of Manufacturers of Sand Lime Products at Buffalo, N. Y. This bulletin contains some useful information in regard to the use of sand lime products.

The accompanying illustration of the extensive buildings of the Buick factories at Flint, Mich., which cover 60 acres, are undoubtedly the largest group of buildings in the world, built of sand lime brick and required 25 million brick in their construction.



IN THE POTTERY WORLD.

The business of the manufacturers for the first six months of the year has been in advance of that for the corresponding term during 1910, and especially is this true of the records for the first quarter of the year.

The outlook for a big fall business was never so bright. It is admitted on all sides that buyers of domestic pottery have not been ordering in large quantities, but they have been buying only enough ware for immediate requirements. The season of the year is approaching when the buyers will be compelled to keep up stocks, with the result that the manufacturers will be offered more business than they can conveniently take care of.

Two new art potteries will begin operations during the next month or so, one in West Virginia and another in New York. The Kiss Art Pottery Co. will begin operations with a capacity of two kilns, at Sag Harbor, New York, while the Lasell Art Ware Pottery Co. will start at Parkersburg, W. Va., with only one kiln. These plants will make a high grade line of art goods, something different, it is said, than anything now being offered in the American market.

William S. Hancock, vice-president of the Trenton Potteries Co., of Trenton, N. J., has presented the Mercer Hospital Association, of Trenton, with \$30,000 with which to build a new brick wing to that institution.

Thomas Harsha, manager of the mold-making department of the Homer Laughlin China Co., of East Liverpool, O., and his brother, are developing plans for the construction of a two-kiln art pottery to be erected at Athens, Ga. A bonus, free site and cheap fuel are among the inducements which are being offered. Flower pots, hanging baskets and a line of jardinières will be made from native Georgia clay. Plans for the plant are being drawn.

The Colesburg, Iowa, Pottery Co., among the largest producers of flower pots in the West, plans an extension to its plant with a view to increase capacity. The company also plans to manufacture brick, drain tile and building tile.

The Robbing Pottery Co., at Uniontown, Pa., has resumed after a brief suspension of operations.

The American Clay Pipe Works is the name of a new company recently chartered in New York City with \$30,000 capital stock, which is headed by William Schrader of No. 1556 Fifth street, Brooklyn, N. Y. Clay pipes will be made a feature by this company.

The case of Richard W. Spencer against the Fredericksburg Pottery Co. was up recently before Judge W. E. Waygandt, at Wooster, O. A motion was made to remove the receiver. Mr. Spencer filed a motion to dispose of the property, and the court instructed Stephen C. Miller to sell the plant. It is believed that the plant will be placed in operation ere long.

W. A. Showers has received the contract for the erection of an addition, 72 by 175 feet, to the plant of the Star Stoneware Co., at Crooksville, O. This is one of the busiest stoneware plants in the west, and the improvement was required with a view to increase the capacity.

An art tile plant is being planned by a Mr. Gould at Kearney, Neb. One kiln is being erected and operations will be started within a very short time.

While it is generally admitted by pottery manufacturers that William Burgess, first vice-president of the United States Potters' Association has gone abroad, it is denied,

however, that his trip was made in conjunction with that of the Tariff Commission, which is headed by Edwin R. Wakefield. Mr. Burgess has made frequent trips abroad in the interest of the association, and this journey is being looked upon as a most important one in view of the threatened tariff schedule revision during the present congress.

The Warwick China Co., of Wheeling, W. Va., will start the fall season with every department of its plant in full operation. Since C. E. Jackson has assumed the management of this plant, it has been doing a larger business than ever, and many improvements have also been made to the property. Announcement of further improvements are expected from the general offices of this concern at an early date.

The Phoenix Ceramic Works, of Perth Amboy, N. J., has just been formed with a capital stock of \$100,000.

Adolph Fritz, who has planned and built more potteries than any other person in the world, is critically ill at his home in East Liverpool, and his recovery is a matter of grave doubt. Several weeks ago Mr. Fritz suffered a sun stroke, and has since been confined to his home. His mind has become affected, it is said, and several nurses are in constant attendance. He is a member of the East Liverpool Lodge of Odd Fellows and also a member of the several Masonic fraternities. He is known throughout the pottery world as the greatest pottery architect in the United States.

Operations have been started at the new plant of the Cannonsburg Pottery Co., at Cannonsburg, Pa., and the first glost kilns have been drawn. This plant has a capacity of seven kilns, and will be operated in connection with the other W. S. George interests. Construction of the new pottery started last summer, but the bad weather during the winter and the non-delivery of building materials delayed construction greatly.

The pottery at White Cottage, O., and owned by C. W. Stine will be removed to Avondale, O., near Zanesville, at an early date, and employment given to 100 or more men.

An additional kiln is being erected at the plant of the Nelson McCoy Sanitary and Stoneware pottery in Zanesville, O., and a new line of jardinières and pedestals is being brought out.

Offering to invest \$18,500 if \$6,500 local capital can be procured, Richard O. Walker has announced that he will build a pottery at Centralia, Wash. Walker is an eastern man and is said to have been identified with the pottery trade in the past. A site has been found available for such a plant, and the proposition is being looked after in the interest of the town by several local business men.

Only nine hours a day are allowed to be worked by the employes of the Cannonsburg (Pa.) pottery, according to orders which have just been put in effect there by John George, general manager. It is contended by the management of this plant that if a workman is unable to make a living within that time, then there is something wrong and that an investigation into his affairs should be started. No employe of this plant is allowed to go to work before 7 o'clock in the morning, and he must stop his day's labor at 5 o'clock in the evening. It is the only pottery in the western district where such a rule is absolute.

AMERICAN POTTERY RENAISSANCE

A Distinguished Group of Pottery Which Proved Exceptionally Attractive at the Annual Exhibit of the New York Society of Keramic Arts



Pottery and Over-Glaze, Newcomb College.



Ornamental Vases from the Tiffany Furnaces.



Exhibit of Chas. F. Binns, Alfred University.



Hand Made Pottery by Misses Penman and Hardenberg.



Vases from the Clifton Walrath Pottery.



Splendid Exhibit of Rookwood Pottery.



Uniquely Decorated Ware, Paul Revere Pottery.

Illustrations loaned by courtesy of Keramic Studio.

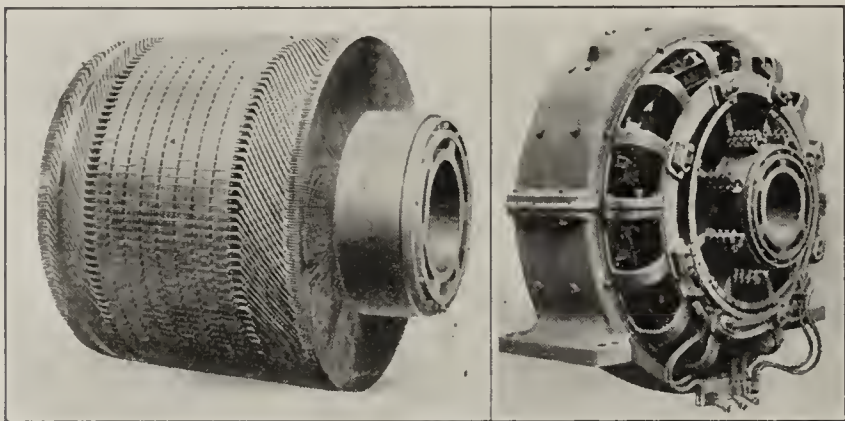
SOME UP-TO-DATE GENERATORS

Interpole Construction Provides Perfect Commutation, Covering All Ranges of Load Without Sparking or Flashing, Minimizing Wear on Commutators

The increasing use of electric power demands overload capacities in direct-current generators, together with sparkless commutation and the highest degree of mechanical excellence. The new standard line of Westinghouse type Q interpole direct-current generators seems to thoroughly fulfill these requirements and the manufacturers claim that it furnishes the most desirable engine-driven generator yet produced for direct-current two-wire or three-wire service.

Interpole Generators.

Prominent characteristics of type Q generators are interpole construction, thorough ventilation and ruggedness with relatively light weight.



Type Q Generators.

The interpole construction provides perfect commutation, with a definite brush position covering all ranges of load. Heavy overloads may be imposed without sparking or flashing and wear on commutators and brushes is reduced to a minimum.

The ventilation of all current-carrying parts and of the armature cores of type Q machines is such, that there can be no hot spots at points dangerous to the insulation.

The frames are of cast steel, a material of high magnetic permeability, which furnishes ample strength with economy of both weight and space, contributing to good ventilation, low freight charges and easy handling.

The rotors or armatures of type Q generators are designed for direct mounting on the shaft of the prime mover, which may be of any type of suitable speed.

The stators or fields are arranged for mounting on masonry foundations or directly on the bedplate of the prime mover.

Ventilation has received particular attention in the design of these machines. The design of all the windings is such as to give shallow coils, with the result that the heat in any part has but a very short distance to travel to the surface from which it is radiated. This, with a very complete and thorough system of air circulation, insures an entire absence of hot spots and a uniformity of temperature never before obtained in similar machines. These features enable these generators to stand heavy overloads without injury.

Type Q generators are standardized for desirable and usual ratings from 25 to 1,000 kw., with speeds conforming to the best engine practice. Up to 100 kw. in capacity the standard voltages are 125 or 250. From 100 kw. to 300 kw. these machines are wound for 125, 250 or 600 volts, and from 300 to 1,000 kw. they are wound for 250 and 600 volts. Machines of 250-volt rating are regularly equipped for three-wire operation.

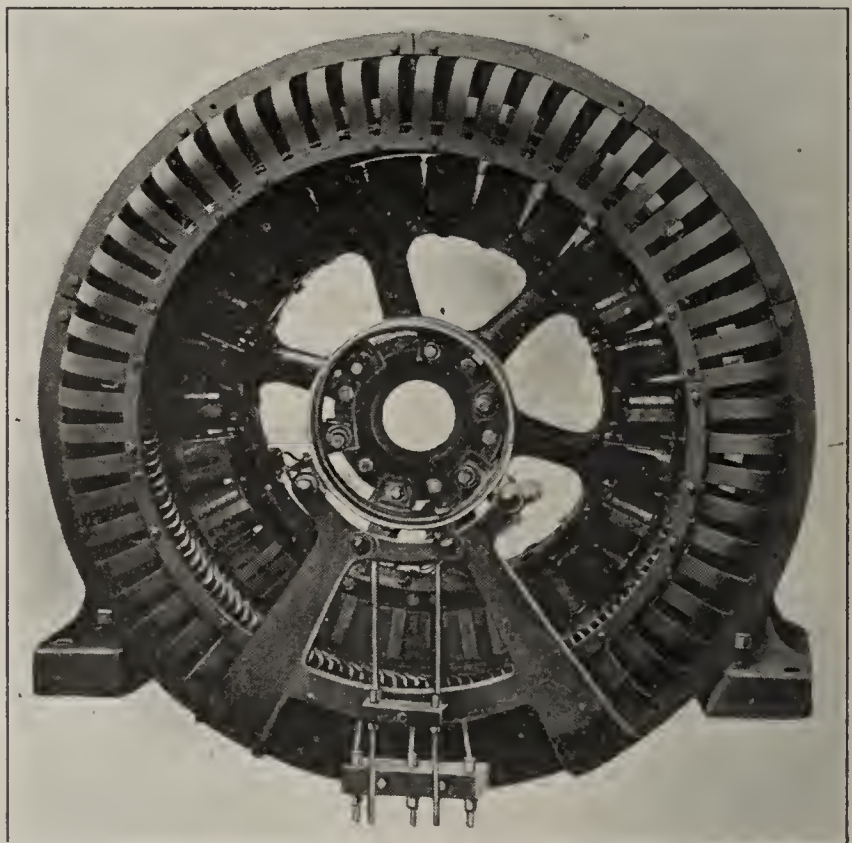
Electrical Troubles.

Most electrical troubles in a direct-current generator arise from faulty commutation, especially during overloads. They begin with sparking, which burns away the copper and brush, causing high mica, roughness of surface, flashing, break-downs in insulation and deterioration in brushes, brush holders and commutators.

In a non-interpole generator, sparking is primarily due to a local magnetic field surrounding a coil which is being commutated. This field sets up an e. m. f. in the commutated coil, in such a way as to oppose the reversal of the current in the coil, and thus tends to cause sparking as the coil or commutator bar leaves the brush. This action increases with the current or load and is especially destructive on heavy overloads.

In a non-interpole machine, sparkless commutation may be obtained, if the brushes can be so located that the armature coils short-circuited by them are brought into a magnetic field of exactly the right direction and strength to neutralize the effect of the local field at the moment of commutation.

Such a field is found to exist near the tips of the pole pieces, and it has been customary to advance the generator brushes sufficiently to bring the armature coils within it during commutation; but this field varies in strength under various conditions of load. Instead of becoming stronger as desired with increase of load, it actually becomes weaker.



Type E Generator, Collector End.

In type Q generators the proper conditions for commutation are obtained by the use of small poles, interspaced between the main poles.

The interpoles have their windings in series with the armature and set up a magnetic field which annuls the effect of the field formed by armature magnetization and generates in the commutator an e. m. f. which assists the reversal of the current. Since the interpole coils are in series with the armature, the interpole field strength

varies in proportion to the load and it thus has the proper corrective effect at all loads.

reversal, has a definite position under the interpole, the coil being reversed must be located accurately with re-

Since the e. m. f. due to the interpole, which assists spect to this reversing e. m. f. Therefore, the correct position of the brushes must be determined accurately before the generator is put in service. When this point has been properly located, shifting the brush position is not only unnecessary but detrimental.

With Westinghouse development of the interpole principle, experience has proven that sparkless commutation is obtained under practically all conditions, from no load to very heavy overloads.

A. C. Engine Type Generator.

A line of low speed, 60 cycle, engine type alternators embodying a number of new features of design has recently been placed on the market by the Westinghouse Electric & Manufacturing Co. The line covers capacities from 50 to 1,100 kw., 2-phase or 3-phase, and standard voltages of 240, 480, 600, 1,200 and 2,400 volts. A striking characteristic of the entire line, as shown by the machine already in operation, is the ability of the generators to successfully carry commercial loads of low power factor.

As the general construction and arrangement of parts of the revolving field generator is familiar to all, this description will be confined to the new features of this design, known as the type "E."

The stator frames are of such design as to give great rigidity and plenty of freedom for the end connections

teeth are firmly supported at each end of the core by finger plates.

Repairs to the armature winding are very easily made because of the design of the winding. The armature slots are open and the coils are held in place by wedges. The coils are entirely interchangeable and are completely formed and insulated before assembling in the core.

The end bells provided for the protection of the armature winding and attached to the end of the frame are of segments built up into circular form and so bolted together that they are light and open, yet rigid and indestructible.

The brush holder brackets, except in the larger sizes, are bolted to the armature frame, which makes each generator complete in itself. On the larger sizes, however, the brush holders are mounted on a pedestal which is to be bolted to the engine bed plate. At least two brushes are provided for each collector ring, which makes it possible to adjust any brush without opening the field circuit.

The Rotor.

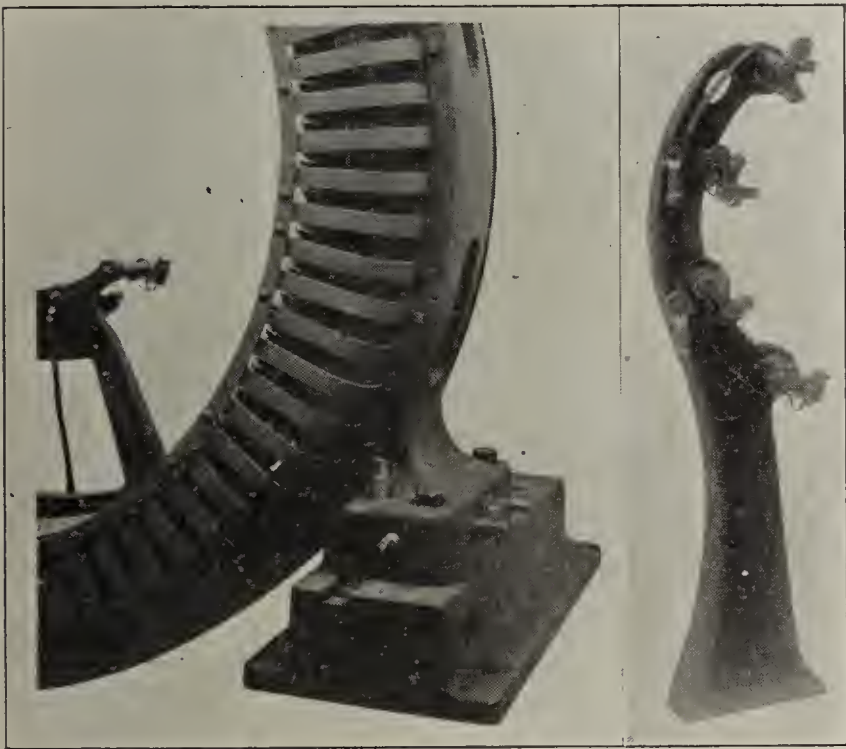
The rotor consists of a casting with laminated pole-pieces bolted on. The proportions of the casting are worked out with special reference to cooling strains, and the material used provides a homogeneous magnetic circuit. Edgewise wound strap is used for the field coils of all type "E" generators. This makes an ideal construction for field coils as every turn of winding is exposed to the air and heat is readily radiated and dissipated. The insulation between turns is of fire-proof quality.

The entire design of the type "E" generators is arranged for thorough circulation of the air.

The field poles of type "E" generators are so designed that a cage damper winding may be used when desired. Such a winding consists of a series of copper bars embedded in the pole faces, with the ends short-circuited like the squirrel cage winding of an induction motor. The winding serves as an effective damper to any fluctuation and thus tends to prevent "hunting." The cage damper winding is not essential to satisfactory operation, however, when modern steam engines are used as the prime mover. Where internal combustion engines are used the cage damper winding is advisable.

The collectors are of the spider type, consisting of two machined cast iron rings mounted on a cast iron bushing or hub, from which they are carefully insulated. The hub is bolted to the rotor spider casting, so that the alignment is entirely independent of shaft adjustments.

Ample factor of safety is allowed throughout the mechanical design and the electrical design is such that overloads and low power factors do not interfere with satisfactory service.



Adjustable Shoe and Slide Rail.

Brush Holder.

of the armature winding. At the same time the construction is economical of material and affords excellent ventilation. The frame consists of a one-piece casting, except in sizes of such diameter that a split frame is a necessity for shipping reasons. In such cases the halves are bolted firmly together, making practically a solid frame. The frames of the smaller sizes are provided with slide rails on which the frame can be shifted to expose the rotor.

The armature core is built up of laminations of japanned steel of good magnetic characteristics. The laminations are dove-tailed in recesses in the frame. They are assembled under pressure and securely held by finger plates and end plates. Generous ventilating ducts are provided in the core to maintain uniform low temperature. The

LIKE BRICK BEST.

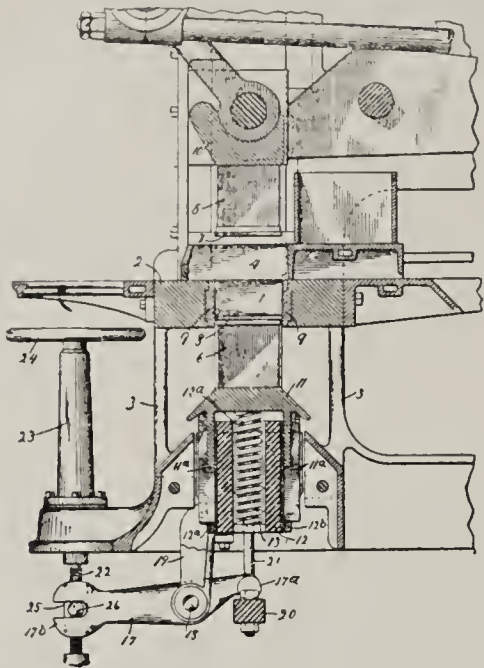
The citizens of Plattville, Wis., recently held a mass meeting to protest against the decision of the city council which had let the contract for the paving of several streets with reinforced concrete. The citizens sent a petition to the council stating that it was the voice of the meeting that brick be used instead of concrete. It is not known whether the council can legally break the contract already signed, but it is quite probable that should other streets be paved, they will be of brick.

LARGE ORDER BOOKED.

The Freeport (Pa.) Clay Products Co. reports booking an order for 7,000,000 paving brick. It will require five months' run to fill the order.

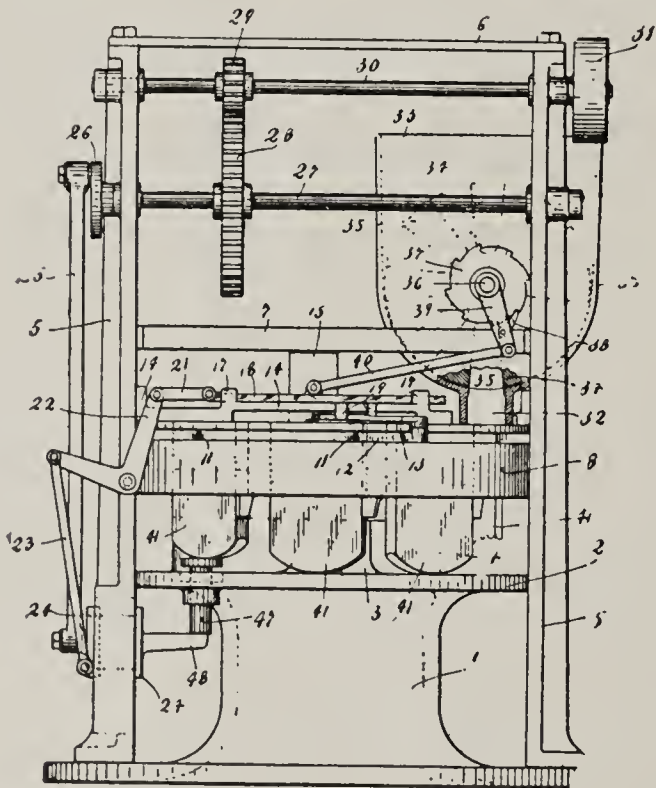
Recent Inventions of Interest to Clay Manufacturers

985,153. Brick-press. Harry J. Flood, Chicago, Ill. Filed Sept. 11, 1909. Serial No. 517,285. In a brick press, the combination of a main frame, a mold arranged therein, upper and lower plungers adapted to co-operate with said mold, vertically reciprocating upper and lower cross head, means for operating the same, springs upon the lower cross head, a saddle upon said springs adapted to support the lower plungers, said saddle



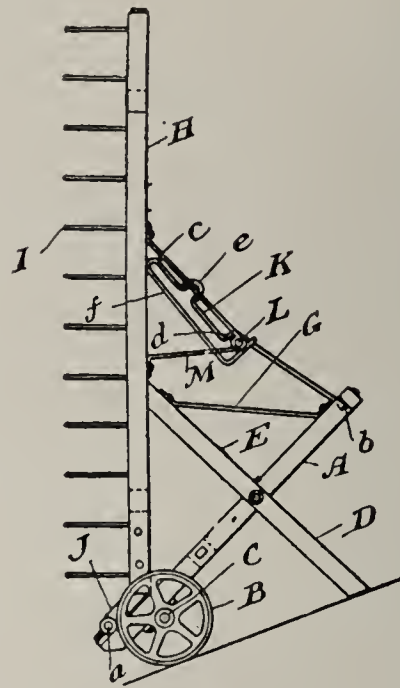
fitting over the lower cross head and housing the same, and means for guiding the saddle in a vertical direction relatively to the lower cross head, said guiding means consisting of vertical guides on the outside of the lower cross head and means on said saddle for engaging said vertical guides in several planes.

981,219—Brick-machine. August H. Olsen, Casper Pedersen and John Andersen, Minneapolis, Minn. Filed Sept. 18, 1909. Serial No. 518,362. In a machine of the kind described, the com-



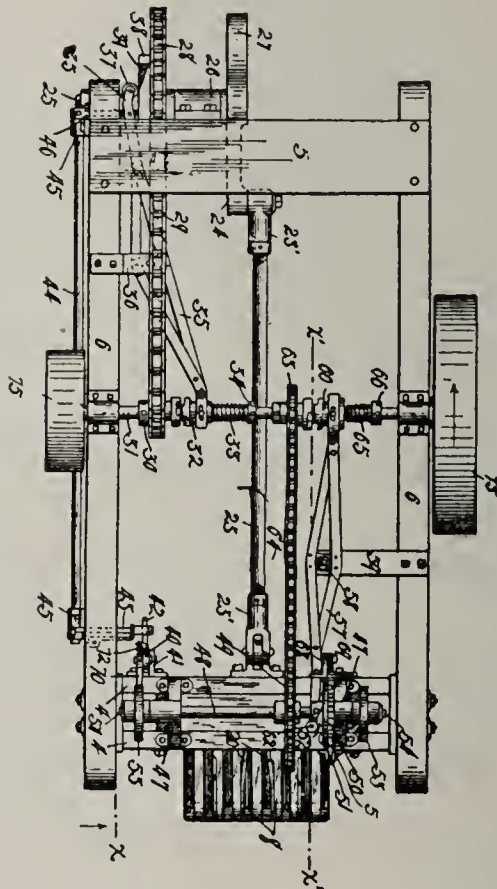
bination with a rotary mold wheel having a plurality of molds, of compressing and ejecting blocks working in said molds, a vertically movable plunger and a fixed cam over which the said blocks are moved in succession, a vertically movable cross head for lifting said plunger, a hopper having a discharge passage arranged to deliver into said molds, a rotary feed head in said hopper having a plurality of pockets, a reciprocatory slide connected to said cross head, two pawl and ratchet devices arranged to be alternately actuated by said slide, the one serving to impart a step by step rotary movement to said mold wheel and the other to impart step by step rotary movement to said feed head, a power-driven countershaft, and a crank and rod connecting said cross head to said countershaft, substantially as described.

985,259—Brickmaker's truck. Bertney C. Heater, Minto township, Wellington county, Ontario, Canada. Filed Aug. 8, 1910. Serial No. 576,236. In a truck, the combination of a wheeled truck frame, an upwardly inclined rack, means at the lower end thereof, extending therefrom at an angle, and pivotally connecting said rack to said truck frame at a point forward of the wheel axis thereof, said rack when in vertical loading and



unloading position having its load center substantially over said pivotal point and when in inclined wheeling position, being substantially vertical and having its load center substantially over the wheel axis of the track, and means limiting the forward and backward movement of said rack.

986,584—Brickmaking-machine. Philip J. Mead, Morenci, Mich. Filed May 16, 1910. Serial No. 561,764. In a machine of the



class described, the combination with a mold and a plunger movable to compress material therein, of drive means, mechanism actuated by said drive means to reciprocate the plunger, means automatically operative at a predetermined point in a cycle of operations of such mechanism to throw the same out of driving connection with said drive means, means actuated by said drive means for raising and lowering the mold, means automatically actuated upon an elevating of the mold to break the driving connections between said drive means and mold actuating means, and means automatically actuated by a movement of said mold actuating means to throw said mechanism into driving connection with the drive means to move the plunger to inoperative position.



Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers— Market Fluctuations and Industrial Prospects

OUR EASTERN LETTER.

New York, Aug. 10.—Common brick interests, as an organization, have at last arisen in defense of burned clay. During the last week, Hudson river brick manufacturers made the first move in what promises to be a definitely organized campaign, designed to impress the fact upon architects and builders that their best interests will be better conserved through the use of brick, either front or common, and terra cotta, whether it be fireproofing or architectural, than by specifying concrete for various kinds of construction.

A conspicuous case in point was the action of Frank M. Patterson in appearing as counsel on behalf of the Hudson River brick manufacturers, before the Fire Commissioner and later before Mayor Gaynor, in both cases, voicing the protests of the clay industry against the use of concrete throughout in the construction of twenty-one fire houses in various parts of New York City at a cost of \$1,000,000. Mr. Patterson was successful in having action on the matter deferred until a later date, and in the meantime the companies which submitted bids on the work, all exceeded the appropriations for the individual structures, amounting in the aggregate to \$500,000. It was significant that no contractor offered to build all the fire houses in a lump contract.

Mr. Patterson's was not the only voice to be raised against the exclusive use of concrete. In addition, the brick layers, tile workers and other labor organizations protested on the ground that the action of the city in prescribing the use of concrete exclusively, constituted a type of discrimination against high class, skilled labor and gave the preference to unskilled labor, such as is largely used in concrete work.

As the matter now stands, tenders must be readvertised for in the regular way. In the interim the counsel for the brick interests plans an interview with Mayor Gaynor with the idea of convincing him that economy and minimum depreciation of the finished buildings will dictate the use of some material that, to use his words, "is not in the experimental stage."

The demand for common brick in this market is about normal, with prices running about \$5.87½ to \$6. The transactions on the wholesale docks, from the middle of July to the first of August, have fluctuated, showing that the supply is being regulated to meet the demand. In the week ending July 24, the cargo sales exceeded the arrivals by three, and in the following week the arrivals were considerably in excess of the sales, while in the week ending August 29, the arrivals were greatly in excess of sales, owing to the fact that the dealers' stacks are now entirely taken and buying at the normal pace has returned to the docks.

Next in importance to the strengthening of the market is the improvement in the supply and demand for terra cotta. The National Fireproofing Co. is authority for the statement that 25 per cent more terra cotta is going into suburban construction work this year than at any corresponding time in the company's history. Even the architectural terra cotta companies are finding the suburban field, especially in the large New Jersey centers, particularly active. Current prices for partition blocks at the Perth Amboy factory show no change, however, from those of preceding months, but there is a definite movement looking toward a stiffening.

There is a concerted movement on foot here in the East to eliminate, as far as possible, from the building field, the unscrupulous speculative builder. The formation of the Greater New York Brick Co. is only one of many associations or companies that have been formed

recently to guard against the losses which have been numerous in this district during the last five years. These have been so extensive that following the boom in 1909, many dealers came perilously near to financial bankruptcy and there were not a few big houses that had to carry themselves along on notes not only through 1910, but well into the current year.

The result has been the placing of strict credit conditions upon speculative building operations of the "fly-by-night" type. That is one reason why the volume of building operations in the Metropolitan district during the last six months has been lower than in previous years. The case of the Borough of the Bronx is illuminating. The total number of new building plans filed there from January to July 14 last year was 1,094, valued at \$23,211,570. This year, up to July 15, the total number is only 724, valued at \$11,283,135.

The speculative builder has vanished from the Bronx and has sought to renew his operation in Queens, a comparatively new territory as far as building activity is concerned, and in New Jersey where land development of three or more years ago, is now being built up.

But the association idea has preceded this class of builder there. He finds that he must pay cash for his materials, if his New York record is below par. Pessimistic writers have pointed out, in the public press, that the reduced number of speculative operations is a sign of a deterioration of the building movement. But such is really not the case. Personal visits to the trade in the suburbs, reveal a volume of trade in building material almost as great as in the first half of last year, and with a volume of actual cash business far in excess of that for the same period a year ago.

This shows the relative improvement in the demand for common brick, inasmuch as this commodity represents about one-third of the total stock carried by the average building material distributor, and also, in a measure, accounts for the prevailing low prices for brick not only in the New York market, but in the suburban field, since the first of the year. Prices might well be lower when brick is sold to consumers on practically a cash basis, or on well secured credits, than when the purchaser is unknown and his credits run considerably over 90 days, if not for a whole year.

The success of the Union County Building Material Dealers' Association, in New Jersey, has encouraged the formation of other building material dealers' associations in other East Jersey counties. The association in Union County is of comparatively recent origin. J. B. Todd, of the Boice-Runyon Co., of Plainfield, and Augustus W. Schwartz, are president and secretary, respectively. It operates in conjunction with the Essex County Building Material Dealers' Association and with the Material Dealers' Club, of Newark; as well as with the Association of Dealers in Building Materials in New York City. There are also being organized, associations in Queens and in the Sheepshead and Bay Ridge sections of Brooklyn.

All these associations merely reflect the purposes of the organization of the Greater New York Brick Co., diplomatically stated by its counsel, Frank M. Peterson, of 27 William street as follows:

"The movement which has been underway for some time and has resulted in the formation of the company known as the Greater New York Brick Co., need not disturb or cause the apprehension of any building interests, whether they be dealers in building materials or consumers of the same.

"The Greater New York Brick Co. is a corporation

formed for the purpose of economical handling and disposal of the product of the various Hudson River brick manufacturers. Under practices heretofore obtaining, there has been no stability in the market for North River brick and the manufacturers have, under conditions which have ordinarily prevailed, realized that the business was being conducted in a most extravagant and expensive, not to say disastrous, manner.

"The object of the new company will be to standardize the methods of marketing their product. It will be possible under the management of a well organized company to practice many economies, beneficial, not only to the manufacturer, but to the dealer and consumer as well.

"It is the aim of this company to methodize the conduct of the business and give more stability and uniformity to prices." It is probable that in the event of the universal adoption of the company or association form of maintaining credit reports of consumers of building materials, that a unit buying arrangement will eventually be effected. One of the features in connection with the establishment of the new brick selling company in New York was the possibility of saving large sums of money by purchasing brick, and other supplies for many distributing companies, as one.

It is common knowledge that \$5,000 will buy \$6,000 worth, whereas \$500 will purchase, in actual value minus profits, about \$450 worth. This is one way in which the cost of brick may be reduced to the dealer and, because he receives spot cash for his product, the manufacturer can buy his raw materials on a cash basis and thus reduce the cost of his brick.

Wright D. Goss, president of the Empire Brick & Supply Co., who, for years has been an advocate of a closer relation between consumer and manufacturer in the production and sale of common brick, gave this interview to "Brick and Clay Record":

"I can see no reason why the Greater New York Brick Co. should not clarify the whole situation. It reaches out to an ideal which we have never before been able to realize; namely, that it brings the consumer in closer touch with the manufacturer, for, after all, their interests are one. This crowding and shoving, pulling and tugging against each other is ruinous, and the public has to pay the bill, but when the bills gets too big, then the builder is either not going to buy or he is going to demand long credits.

"When one stands apart and sees how gradual has been the decline in the price of common brick, in this market, since the middle of last year, it is not difficult to see why the time had come to do something. We have accomplished it on the basis of 'Live and Let Live.' We believe there is a field for the manufacturer as there most certainly is for the consumer. The one seeks to obtain a suitable return upon his investment and the other seeks to obtain a good value for the money he expends. In between there are two other interests, the jobber, or wholesaler and the distributor. Under the old arrangement the wholesaler's interest was to sell brick as fast as he could, and it was to the advantage of the dealer to buy as cheaply as he could. Could the market be expected to have any stability under such conditions? I think not.

"Under the new arrangement, the manufacturer will have absolute knowledge of the state of demand. His shipments will be governed entirely by the requirements in the city and every manufacturer in the company will have an equal opportunity for marketing his brick.

"When he can buy his raw material at a price that gives him a positive profit in producing his commodity, through lump contracts, he can easily figure out, just how much brick he will have to produce, and the great oversupply that was characteristic of conditions up the river this year, will be impossible.

"Then again, there has arisen in this city and in the surrounding territory, conditions that needed remedying immediately. There have come into the building field a certain type of construction company which has proved a serious menace to good, honest business practice. I refer to what is known as the 'shoe-string' builder, the man who opens up big development projects on paper and depends for success upon his ability to sell the buildings upon completion and in the meanwhile obtaining a good living from the enterprise. When one operation

is completed this type of builder usually begins another and thus keeps moving during the entire season.

"Such practices will henceforth stop, or, at least, be restricted so as to practically eliminate them. We will know with whom we are dealing and thus be able to sell only to well secured companies."

It was presumed that S. Percy Hooker, Commissioner of Highways at Albany, N. Y., would be the new manager of sales for the company, but subsequent developments have shown that conditions are such that Mr. Hooker is unable to give a definite word, at present, as to accepting the office, and so the company will get along without a general sales-manager in this city, for the time being. The John P. Kane Co. is one of the companies with whom arrangements have been made for distributing North river brick in this market and the Empire Brick & Supply Co. is another. It is said that negotiations are pending to include among the distributors, the Candee, Smith & Howland Co., John Bell, Rufus Darrows's Sons, John A. McCarthy & Brother, N. & J. W. Peck, the Nathaniel Wise Co. and the Newark Supply Co., all of which represents the largest handlers of North river common brick in the district.

A comparison of sales and arrivals of brick barges before and since the inauguration of the new selling methods shows the influence of the new company upon the market. In every week, but one, the arrivals this year were less than last year's for corresponding weeks. Herein is shown the effect of the new company's plan to curtail supply.

Old Wholesale Market Almost Deserted.

The old wholesale brick market in West Fifty-Second street has practically passed away. The only survivors are the offices of William K. Hammond and Emmons & Roberts, the former being an independent manufacturer and the latter representing several independent yards. The offices of John McNamara, Frank L. Holmes, Ralph DeNoyelles, E. L. Jova, John B. Rose and others, are now identified with the new company at 103 Park avenue.

The outlook in the brick situation is for better business conditions. It is possible that some of the companies not in the new combination will seek fields outside of the new company's territory. There is already a noticeable concentration of effort on the part of many companies operating outside of New York City.

Some of the most conspicuous foreign contracts recently taken by eastern companies were three, by the Sayre & Fisher Co. The company recently closed for 200,000 red faced brick to be shipped from the company's Sayreville, N. J., plant by "lighter" to this city and thence by steamer to St. Johns, New Foundland, for use in the New Royal Mission there. Another contract was for 400,000 repressed brick, which will be shipped within the next few weeks by schooner from Sayreville to Havana, Cuba, for a garbage crematory. Still another contract taken by this company is for 1,500,000 common brick which will be shipped direct from the factory by vessel to Richmond, Va., for use in a large new hotel.

NEW ENGLAND NOTES.

Berlin, Conn., August 12.—As the brickmaking season for New England is half over, for 1911, it is very evident that the production for the present season will be short, compared with that of other years. The main cause for this condition is the late starting last spring, when most of the brickyards were a month later in beginning operations than the average year. If the present demand holds for another month the stock carried over until the spring of 1912 will be very small. Prices are still low, considering the outlook. Several of the largest manufacturers have announced their intention of holding their brick until they bring about \$6.00 at the yard, which is about 75 cents above the present asking price. There would be no complaint among the contractors or builders, if the minimum price on common brick was \$6.00 and it would be a blessing if the manufacturing in New England could get together so that a reasonable profit could be made. Several attempts along this line have been made and a few years ago some success was attained by the use of what were called, brick exchanges. With the advent of the Federal Brick Co. and its early failure in 1907, due to the closing of the Union Trust Co., of Providence, which financed the organization, these mutual organiza-

tions were broken up and today the condition among the brickmakers seems to be one of suspicion, with a consequent cutting of prices. Let us hope that the brick men can again get together and stand courageously on a platform of higher prices.

The Getchell Bros. Ice Co., of Bangor, Me., are installing at their yard in Brewer, Me., a No. 2 "New Haven Machine," made by the Eastern Machinery Co., together with a complete steam plant. This fall they anticipate putting in a system of drying racks. These improvements will very materially increase the capacity of this plant, which was formerly the William Burke yard on Wilson street, Brewer. The brick from this yard are famous all over eastern Maine, for their toughness and uniform color.

The Bangor Brick Co., of Bangor, Me., report business booming. This plant makes both water and sand struck brick.

The Horace Purington Co., of Waterville, Me., with works at Skowhegen, have the contract for the New Bangor Post Office to replace the one destroyed in the fire. This company manufacture their own brick and have a capacity of over 7,000,000 per year.

The demand for brick in Bangor, Me., never was better. Brick there are bringing \$9.00 on the job for all that can be supplied.

The Brooks Brick Co., of Brewer, Me., are running to full capacity and this year will make over 4,000,000 wire-cut brick.

The most important building proposition for this month in New England is the Peter Bent Brigham Hospital, which consists of twelve buildings, and will be erected in Boston, Mass. Wells Bros. Co., of Boston and New York, have the contract. This hospital will take 800,000 water struck, 1,000,000 hollow brick and 2,000,000 common brick in its construction.

Considerable interest has been aroused among the brick manufacturers by the passage before the Connecticut legislature of a bill removing the \$5,000 limit for death damages. Hereafter there will be no restriction on the amount recoverable in the courts.

Work has been begun on the brickwork of the new tuberculosis hospital at the county farm at Grasmere, N. H.

Charles L. Sauter is burning a kiln of half a million bricks at his brick yard at Northampton, Mass.

The Stamford (Conn.) Mason's Supply Co. has felt little of the depression which has struck the building trades. They have material ordered for present and future delivery sufficient to keep them occupied for some time. They have large orders for brick from builders in South Beach, and also a great demand for terra cotta.

Reports from Boston, Mass., show that business for the last week makes a very good showing. Small and moderate sized orders have been very fairly numerous and involved in the aggregate a large quantity of brick. There have been, too, some important individual purchases, including the material for a mill at Andover and a large car barn for the Boston Elevated, at Cambridge. In both instances the New England Brick Co. was the seller.

The Worcester, Mass., Terrazzo Tile Company has been organized with a capitalization of \$10,000, the stock having a par value of \$100. Charles A. Wilkinson is president of the concern with Agnes T. Wilkinson as treasurer, and Richard G. Whitty, secretary.

SPARKS FROM THE WIRE.

The machine room at the Alleghany Brick Co., at Valley Camp, Pa., was recently destroyed by fire and dynamite, entailing a loss of about \$10,000. The origin of the fire is unknown.

The Granite Brick Co., of Columbus, S. C., are now placing pressed brick on the market, which are being turned out at the rate of 100,000 per day. The manufacture of paving brick has not yet been commenced, but will be taken up later. The company is capitalized at \$200,000 and is developing large clay deposits on Clay Creek near North Columbia.

Orders for a million brick have been booked by the Twin City Tile Company, of Kennewick, Wash., since the first of the year. This company furnished material for the new school building at Mabton, and the plant is now

turning out brick for the \$60,000 high school at Kennewick, and a \$35,000 school building at Pasco, and Richland, Wash., as well as for several other large buildings in the locality.

The Rockwood (Pa.) Brick Co., have begun the remodeling of their plant, under the direction of G. W. Brinham, as superintendent. The latest improved machinery will be installed and the railroad company will soon install a siding, to facilitate the shipment of brick.

The Sibley-Menge Brick & Coal Co., of Sibleyville, Ala., with offices in Birmingham, Ala., are installing additional machinery and kilns which will increase the capacity of the plant from 60,000 to 100,000 brick.

Messrs. Wright & Hutchinson who came to Delavan, Ill., recently from their former home at Edinburg, Scotland, will take charge of the Tillbury tile and brick yard there. These gentlemen are members of a family of tile and brick makers, who operate a large plant in the old country and are reputed masters of the art of the business.

The Utah Fire Brick Co., of Salt Lake City, are having a smoke consumer demonstration, at their plant.

A \$30,000 theatre, of brick and stone, will be built at Omaha, Nebr.

OUR BUCKEYE LETTER.

Columbus, O., August 12.—The Stevenson Co. reports its plant for the manufacture of brick, sewer pipe, tile and other lines of machinery at Wellsville, O., has been doing a business about 90 per cent of its normal thus far this year, and consider that rather dull. The outlook for the last half of the year, considering what's in sight, is very bright.

Orders are so heavy with the brick manufacturers in the Columbus district that all plants will be working to capacity for months to come. The volume is far surpassing that experienced in recent years, and is due to the fact that more building is being done in central Ohio than for a long time.

After an idleness of several months, officials of the South Webster (O.) Brick Co. have announced their intention to place their plant on the active list.

The General Fireproofing Co., at Youngstown, O., will erect additional factory buildings at an early date in order that capacity might be augmented.

Clay miners employed at the Royal Sewer Pipe plant at Canal Dover, O., have formed a union and have become affiliated with the American Federation of Labor.

Announcement is made at Cleveland that the Van-Ormer Loose Wrench Co., which was recently formed, will erect a brick plant at Trafford City, Pa.

The Stevenson Co. has installed one of their latest improved motor-driven 8-foot wet pans in the works of the Columbus (O.) Iron & Steel Co., for grinding and mixing slag and waste iron ore. The company have expressed themselves as well pleased with the motor-driven machine.

Maynard H. Church, of Cleveland, O., has formed the Holden Clay Products Co., with a capital stock of \$10,000. The charter has just been issued here. Mr. Church is at the head of the M. H. Church Co., Cleveland, which has taken over the entire holdings of C. Edward Holden, the aged brick manufacturer of New Philadelphia, O. An inventory of the property has been taken. An option on the plant for \$150,000 is reported to have been taken by the Cleveland concern. The plant and 600 acres of land are included in the option.

THE SMOKY CITY.

Pittsburg, Pa., August 12.—"We have no reason to complain about new business," declared an officer of one of the largest selling agencies in the Pittsburg district to "Brick and Clay Record's" representative this week, in answer to a query concerning business prospects. This indicates that sales are more frequent than during the July season of last year and the indications are that August and September will equal the good business booked during the month of June, which was about up to normal.

There is considerable suburban home building in the Pittsburg district this season, and the opening of many new additions have created considerable new business for the sewer pipe manufacturers. Throughout Western Pennsylvania there are nearly one million square yards of paving to be done in streets and highways, and this is going to take a large volume of brick and paving block.

Local sales agencies are greatly interested in the construction of the new Oliver Hotel building, upon which work is expected to be begun ere the year ends. It is the general opinion that the clay products used in this improvement will conform in quality and color to that used in the erection of the 28-story Henry W. Oliver office building, which is across Sixth avenue from the site of the new hotel. This will prove the biggest brick and clay product job of the year.

The Renova Fire Brick & Clay Co. has been formed at Lock Haven, Pa., by Richard T. Power and on July 24 an application will be made to the commonwealth for a charter. Headquarters of the new company will be maintained, it is reported, at Lock Haven.

At the annual meeting of the Union Mining Co., which owns the Mt. Savage Fire Brick Works at Mt. Savage, Md., which was held recently, President H. Crawford Black reported that additional capacity is required in order to properly handle the increasing business of the company. As a result, additions are being built to conform with the demands being made upon this concern for its product.

The Rockwood Brick & Coal Co., whose brick plant is in the Johnstown, Pa., district, will remodel its plant and resume operations as early as possible.

It is reported here that there are no surplus stocks in the eastern markets, which is about the same condition which prevails in this locality.

Two of the largest clay products concerns in the Pittsburg district have just announced the declaring of dividends for the quarter, which makes the stocks of both rather active on the exchanges.

Directors of the National Fireproofing Co., with offices in the Fulton building, declared a quarterly dividend of 1 per cent to holders of stock. For years this company has been on the list of dividend paying stocks, with the result that its stock has been steadily advancing in value.

The Harbison-Walker Refractories Co. is also in the dividend paying class, and the board of directors of this company announced the payment of 1½ per cent to stockholders of record on preferred stock on July 10.

A company is being formed at Beaver, Pa., to buy 100 tons of clay per day for a year from a clay mine, the owners of which have just located a 12-foot vein. There is an unconfirmed report that a clay working plant will be established in that locality ere long.

Bessemer paving blocks are to be used in large quantities in street improvement work at Altoona, Pa.

At Sanfords Corners, near Utica, N. Y., the plant of the Gardner White Brick Co. the capacity of which was 25,000 per day was destroyed by fire.

A loss of about \$15,000 was sustained when the brick plant of the Merchants Coal Co. was burned at Boswell, Pa., recently.

The Allegheny Brick Co., of Tarentum, Pa., was awarded a nice contract recently when the commissioners of Washington, D. C., placed a big award with the Western Pennsylvania concern, which was the successful one among a number of bidders. This plant will be kept running to capacity for months to come.

News has been received in the district of the formation of the Rolla Fire Clay Co., at Rolla, Mo., with \$14,000 capital stock. David E. Cowan is at the head of the company.

The Lock Four Brick Co., at Charleroi, Pa., has recently installed a 9-ft. dry pan and other machinery of the Stevenson's make for the manufacturing of shale brick.

THE PACIFIC COAST.

San Francisco, August 12.—There is more activity in building in San Francisco and nearby towns this summer

than for several years past, the volume of work now on hand being nearly as great as the year after the fire. The character of the business, however, is somewhat different from that of 1907-08. At that time large office buildings and hotels were the principal feature, and activity was mainly concentrated in the business district of San Francisco. Now a large proportion of the business is in outlying towns. Some office buildings are being erected here, but they are for the most part comparatively small, and the hotels now under way are also of only moderate size. During the latter part of June and the first half of July, however, many substantial contracts have been let, and there are enough new inquiries to assure a strong demand for materials throughout the remainder of the year. Several of the recent contracts have been for buildings which have been under consideration for a year or more. There has been some talk of hesitation on the part of investors, but money for building purposes is coming out more freely than for a long time past, and the expected announcement of the site of the Panama-Pacific Exposition is likely to give a new stimulus to business.

The price of common brick, as predicted, advanced to \$7 per M. about the first of the month, and is very firmly held at that figure. All the plants which have been shipping to San Francisco this year are operating at full capacity, and so much of the output has been booked in advance that it is hard to get material at short notice, the local yards having very little surplus over current needs. As far as can be learned there is no tendency on the part of the more distant plants to ship to San Francisco, and unless the supply is greatly increased from some source not known at present the market should continue firm for an indefinite period.

A department of the clay industry which has received little attention, but which has been of no little importance for the last few years, is the manufacture of conduit pipe for underground wires. Wires are now required to be laid underground in parts of all the important towns on the Coast, and with the rapid development of the power business, and the extension of telephone systems, the amount of material consumed has been very large. This glazed terra cotta conduit pipe is manufactured by several of the pottery plants around San Francisco, and forms quite an important part of their output.

Gladding, McBean & Co., whose pottery plant at Lincoln, Cal., is already one of the largest in the state, are getting down to actual work on the numerous improvements for which plans have been developing for several months past. A contract has been let for the erection of a steel shed 360 ft. long, to serve as a receiving station for the raw materials from the banks. The shed will be divided into large bins, and a large electric traveling crane will be installed to take the material from the cars, which will enter the building on an elevated tram.

A railroad is being laid from the factory to the clay pit, some distance from the plant, to be used for conveying the clay to the plant, instead of the old team and wagon hauling. The loading will be done by a steam shovel. Automatic conveyors take the material from the bins to the disintegrators.

The Masons' & Builders' Association of San Francisco met July 10 for the annual election of officers. The following were re-elected: E. J. Brandon, president; Walter Reed, first vice-president; E. S. Rainey, second vice-president; W. S. Scott, secretary, and Thomas W. Butcher, treasurer.

The San Luis Brick Co., of San Luis Obispo, Cal., is just opening the largest kiln it has yet burned, containing about 2,250,000. It is reported that San Luis Obispo brick men have purchased five acres of land near Lemoore, Cal., for establishing a brick plant.

The city of San Diego, Cal., is building a long extension to its sewer system. The city authorities decided on concrete pipe for the principal part of the work, but a large amount of brick will be used, and bids were recently taken for 500,000 brick to be delivered along the line of the extension.

The large plant of the California Brick & Clay Manufacturing Co. at Antioch, Cal., which has been idle for a year or more past, may be started up again in the near future, as W. F. Barnes has secured a four months option on the property.

Holt & Gregg's brickyard near Anderson, Cal., is

having an extremely busy run this summer, and finds some difficulty in keeping up with orders. This concern is shipping brick all over the northern part of California, and gets considerable business in southern Oregon, where an unusual amount of building is in progress.

Parties at Canon City, Col., are working on a project to install a new pressed brick plant at Long Beach, Cal.

The Standard Sewer Pipe & Terra Cotta Co. has been incorporated in San Francisco, with a capital stock of \$1,000,000, by W. F. Barnes, H. C. Norton, E. C. Leffingwell, Wm. Sea, Jr., and J. A. Bloch.

Arrangements are being made for the installation of a sewer system at Dinuba, Cal.

Bids have been asked for the construction of a sewer system for Phoenix, Ariz., the estimated cost being about \$400,000.

The town of Baker City, Ore., has let a contract for pipe for the new waterworks to the Idaho Glazed Pipe Co., of Boise, Ida., at about \$89,000.

The Citizens' Light & Power Co., recently organized at Sacramento, Cal., is planning an extensive distributing system, and proposes to put all its wires under ground.

The Capital Sewer Pipe Works of Sacramento, Cal., the only pottery in that city, is growing to be quite an important industry, shipping material all over the northern part of the state. The plant was established in 1879 by George Muddox, who was succeeded by his son in 1899. The plant then consisted of two kilns, and the output was almost entirely flower pots, jugs, etc. Since then it has been greatly increased and now occupies a three-story building, covering half a block, the principal output consisting of sewer pipe. The raw materials used are brought from Lincoln and Ione, Cal.

Plans will soon be completed for the new Girls' High School in San Francisco. Like the old building this school will probably be of brick, and the cost is estimated at \$500,000.

TWIN CITIES AND THE NORTHWEST.

Minneapolis, Minn., Aug. 11.—The crop disappointment has for the present resulted in a serious depression in building interests. The number of structures under way seems to be about the same, but they are confined to the smaller ones—generally residences or small stores, which do not call for much material for the job and the material required is usually of the cheaper variety. There is reason to expect that when the crop is all in, it will be found that it is not as bad as was expected, and there will be a reaction which will start a number of brick structures and larger buildings generally. The use of brick has been increasing up to this period of the year when conditions worked a depression. Brick manufacturers are feeling the effect of it. Many yards will shut down this fall earlier than ever before. One or two have already closed down, although it is quite early. But they have had a limited trade and find that their outlet is small. So after accumulating enough to serve for the fall and winter, they are shutting down. In tile work, the same thing is true. The very dry season last summer and the lack of surplus water this year, has cut down the demand for tile for drainage. Although the dry period makes it quite easy to put in tile in low ground, where ordinarily it would be a job on account of so much water, farmers have refused to consider buying tile because they did not need it immediately.

Work is progressing steadily on the new plant of the Barr Clay Product Co., at Wanamingo, near Kenyon, Minn., and an office has been opened for the company in Kenyon. The work will take some months to complete.

The subject of conforming to the laws regarding fire escapes has come up again in St. Paul, when a request was made for a new trial in the suit for enforcing a lease which was broken by the tenant because the building did not comply with the city ordinance. The case went against the landlord, the court holding that a lease was not binding where the building did not comply with the ordinance. The landlord moved for a new trial, and the result was a worse "call-down" than ever. The court remarked that apartment buildings which do not comply with the requirements as to fire escapes are contrabands of law and outlaws. All this will be good reading for

people who are urging the use of permanent fireproof construction.

The stockholders of the Fairmont (Minn.) Drain Tile & Brick Co., have named a committee of nine well-known business men to work with the officers of the company on the question of what to do for a suitable supply of clay. There are two possible solutions before the board—one to ship in a workable clay from the outside, which of course would add materially to the cost of the product. The other is to install an outfit for washing the clay which they have available at the plant, to work out the limestone which makes the trouble. This will also be costly, but it can be done. There are several plants at different points in Minnesota, where this is done successfully.

W. F. Carey, of St. Paul, and others have sold their interests in the Missoula Brick & Tile Co., of Missoula, Mont., to Charles Gould and others. Mr. Gould is manager of the reorganized company.

The real estate associations of the Twin Cities recently visited Denver, attending the convention of the national association there. One of the things which was called to their attention on their visit was the fact that Denver does not permit the erection of frame dwellings in the better residence sections. The result is that there is a better class of building in the residence districts. There is an air of stability and substantiality which is wholly lacking in the Northwest, where nine-tenths of the dwellings are of frame construction. The knowledge will be of benefit to the members of the association, and it should be extended to others.

Minneapolis had a good showing in the building permit totals for the month of July, with a total of \$1,411,190 against \$1,151,930 for the same month of a year ago. The city is ahead for the seven months of the year, with a total of \$9,904,575 against \$9,285,410 for the same months of 1910. Should the same average continue for the remainder of the year, the total will reach \$15,000,000. Last year the total was \$14,363,830.

The outcome of the campaign by the Wisconsin Clay Association for lower freight rates on brick is a source of satisfaction to the members of the Minnesota Clay Association, since it gives them encouragement to push their work. They have not yet attempted to take up the question of lower freights, but will doubtless do so—perhaps at the next meeting, as the subject has been discussed informally. At the present time all rates in Minnesota are in a state of uncertainty, owing to the fact that the question of the rates is now before the courts. Hence it would be practically impossible to get any action until a final decision is reached. The Minnesota case comes up before the supreme court of the United States in October, but it is impossible to guess when the decision will be handed down.

There is a growing use for square clay tiles for flooring purposes in cafes and other semi-public rooms. They are sanitary, cleanly, neat and attractive, a combination of virtues which cannot fail to make friends for the tile.

The annual state fair will be held between St. Paul and Minneapolis, Sept. 4-9. This gathering attracts an attendance of from 300,000 to 500,000 people, and offers an excellent opportunity for displaying the advantages of clay wares. The cement people find it worth while, and have liberal displays there. One cement company is now erecting an attractive building. There are a few displays of clay wares, but they are limited. The Northwestern Clay Association discussed the question of having the erection of a model clay product dwelling on the grounds at the last meeting. There is no question that such a building would be of immense advantage in spreading knowledge of what can be done with brick and tile in a moderate cost dwelling.

Mr. James S. VanVolkenburgh, former sales manager of the Grand Rapids Brick Co., and prior to that connected with the Zeeland (Mich.) Brick Co. for eight years, and also with the Valley City Brick Co. and New Brick Co., of Grand Rapids, has resigned his position and will hereafter look after his interests in the Wolverine Phonograph Co. at Zeeland, Mich.

THE BLUEGRASS REGION.

Louisville, Ky., August 10.—Announcement has been made that the Louisville Brick Club, which started some time ago with good prospects for success, has been dis-

solved, and that the weekly meetings which were formerly held for the purpose of discussing trade topics and devising publicity campaigns are no longer on the schedule.

Just why the club quit the field can hardly be definitely stated, for good results were being secured from the advertising. The reason which is generally assigned for the failure of the organization to continue in the field, however, is lack of support on the part of the contractors. Some of the latter came into the club, but most of them, including those who have the largest amount of business, and who therefore would have been thought to be most keenly interested in the work which the club was doing, remained out of the fold.

A man, who is said to have the largest brick contracting business in Louisville, was quoted as saying that he had all the business he could attend to, and that he saw no reason for spending money to boost the business of other people.

Joseph Nevin, of the Louisville Brick Co., was president of the club; Isaac Tyler, vice-president and Thomas Bishop of the Southern Brick & Tile Co. held the post of secretary. He did good work in organizing the publicity campaign and in handling the "follow-up" end of the work which emphasized upon the minds of inquirers the advantages of brick for building purposes. It is believed that a lot of business which would never have been developed otherwise was created through the advertising campaign of the Brick Club.

It was seen from the start that the luke-warm attitude of the contractors would probably prove a drawback in the work. The contracting interests apparently felt that there was no need for them to worry over the situation and that their interests were sufficiently safeguarded to make the expenditure of money in the club unnecessary. Inasmuch, however, as the manufacturers realized that whatever publicity they developed would benefit the contractors as well as themselves, they felt that it was unjust for the latter to agree to receive benefits of efforts which they were not contributing to further.

Success attended the efforts of the Louisville brick men in getting the manufacturers of New Albany and Jeffersonville, across the river from Louisville, interested, and the accession of several members from the Indiana cities strengthened the organization considerably. Even the infusion of this amount of new blood, however, did not suffice further than to prolong the life of the club, which was seen to be in its last stages several weeks ago.

The club, as far as has been learned, has not been formally dissolved. To use the words of Grover Cleveland, it has gone out of existence by reason of a large injection of "innocuous desuetude." There is a possibility that the corpse may be revived into real activity, and those who have the best interests of the brick trade at heart sincerely trust that this "consummation devoutly to be wished" will come about. It will be necessary, however, in order to insure permanent success, for all the various branches of the business to unite and to maintain the work for the brick trade at large, without allowing petty personal jealousies to creep into the organization.

As an instance of the possibilities of the latter, some of the members of the club intimated that they thought the advertising which was being done benefited some members more than it did others. Just how this idea was conceived is not known, as the publicity matter which was printed appeared to be of such a general nature as to impress the reader with the merits of brick without referring him to any particular kind or to any individual firm. Nevertheless, it was evident that a few of the brick men developed the belief that the expenditure of the money used in "campaign work" was not evenly distributed as far as the general interests of the business were concerned, and this tended to cause friction.

"It is a matter for deep regret," said one of the Louisville manufacturers to the correspondent of "Brick and Clay Record," "that the club did not remain in existence. Not only was good work being done along the lines of boosting brick, but good results were being secured in other directions. We were getting to know each other better, such topics as the cost of production were considered, and information was being disseminated which would ultimately have resulted in direct and immediate benefits to everybody in the organization.

"In time we might have developed a traffic bureau to handle rate and transportation problems which develop in the business; and the club could have exerted much influence in matters of general interest, such as the maintenance of the streets and other propositions which would have been of interest to our trade. The longer the club was at work the more evident, to me, were the possibilities offered for beneficial results. Therefore I was deeply sorry to learn of the apparently general consent to allow it to pass out of existence."

The summer is a bad time for local trade organizations, and many of those, in touch with the brick situation in Louisville, believe that with the coming of fall interest will be reawakened and the club organized on a more permanent and solid basis.

ILLINOIS.

The scarcity of brick in the Twin Cities has caused the suspension of building operations to a large extent. This condition is one rarely experienced, for the two brickyards in Urbana have usually been able to supply the demand. This year is the exception, however, although the situation promises to be relieved somewhat by the opening of another kiln by Andrew Barr. This condition has been brought about largely through the heavy repairs and changes made at the Sheldon plant and the partial failure of the first kiln of brick, together with the small stock left over in the plants from last year.

East Peoria is becoming one of the big brick centers of this country. F. E. Carter is now running three yards at full capacity with a total output of 110,000 per day, but is not able to keep up with the demand. He is expecting to install a new machine very soon which will increase the output by 30,000. A good quality of dry pressed brick for finishing work, and paving-brick are manufactured.

The brick manufacturing business in Macon City, Ill., has grown to large proportions. The first brickyard was opened in that city in 1860 by R. Seward and the business is now being carried on by his two sons, H. H. and George Seward, who have a modern brickmaking plant with a capacity of about 40,000 brick per day. The other brickyard in that city is owned and operated by A. Walter.

AN Atlas Engine will
not make better
bricks, but it will likely
make more of them.

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INDIANAPOLIS

BRICK

AND CLAY RECORD

VOL. XXXIX
No. 5.

CHICAGO, SEPTEMBER 1, 1911

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SINGLE COPY, 10c.

THE LEADING CLAY JOURNAL OF THE WORLD

Table of Contents

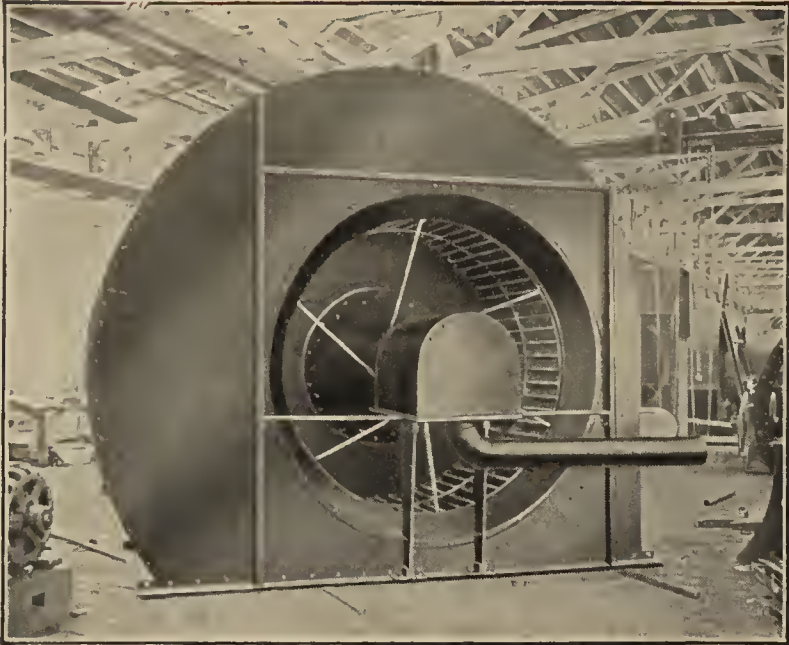
	Page		Page
Solid as the Rock of Ages	Frontispiece	Superintendent—Risk in Employing Boys —Cost of Making Brick	179-180
The Measure of Value—Some Pertinent Facts Relative to "Brick and Clay Record's" Circulation	159-161	Drain Tile and Drainage—Conditions in the Drain Tile Industry—Letters from Prominent Drain Tile Manufact- urers—Boosting Clay Tile	181-182
Black Hand Methods	161	The Paving Brick Industry—Teamsters Prefer Brick—Insufficient Expansion Joints—Gilding the Lily	183-184
Ideas Wanted by Show Management.....	162	Terra Cotta and Fire Proofing—Hum- boldt Bank Building Faced with Terra Cotta—Fire Proof School Buildings	185
Mr. Clay Worker—This is Your Show..	163-164	Sewer Pipe News—Coast Business Good —More and Still More on Prices	186
Drainage in Eastern England by C. G. Elliot	165-166	Pottery News—Lesell Art Pottery—Gen- eral News of the Craft.....	187
Clay Conservation in the East—Work of Clay Working Department of the New York State University by Allen E. Beals.....	167-169	Sand Lime Department—Seattle Sand- Lime Plant—Father of Sand Lime Products	188
North Collins Shale Brick Co.....	170	New Revolving Shovel—Up-to-date Trade Literature	189
The Value of a Name—Growth and De- velopment of Freese Clay Working Machinery Plant	171-174	Striking Example of Progress.....	190
Busiest Summer Ever Experienced by the J. D. Fate Co.	178	Trade Review—Sparks from the Wire— Blue Grass Region, Kansas City and the Southwest, etc.	198
Editorial Comment—We are Optimists— Money in an Old Stocking	176		
Butler Building at Dallas, Tex.—With- stood the Chicago Fire	175		
A Valuable Work—Ancients Used Hol- low Block—U. S. Fire Loss	177		

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Fans



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TRADE MARK

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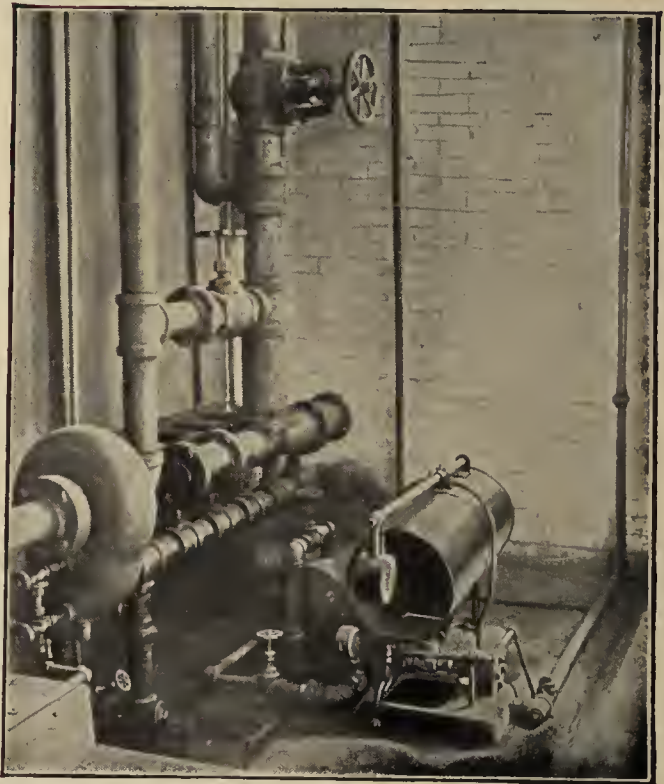
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VOL. XXXIX—No. 5

BRICK

AND CLAY RECORD



SEPTEMBER 1, 1911

THE MEASURE OF VALUE

Heart to Heart Talk With Our Readers Regarding Brick and Clay Record's Circulation and the Undeniable Proofs of Its World-Wide Supremacy

Feeling that we are working hand in glove with all the clay products manufacturers throughout the country, for the progress, development and prosperity of the great clay industry, we naturally take a personal interest in the welfare of each member of the clay fraternity. With this feeling of comradeship in view, it is a pleasure for us to believe also that our fellow clay workers take more or less interest in the progress and welfare of "Brick and Clay Record," the publication which, above all others, is earnestly trying to serve their best interests.

Therefore, we are going to tell our readers, in this little article, something of the recent successes and growth of this publication. We are going to have a heart to heart talk with them, taking them into our confidence and showing them the inner workings of the publisher's stronghold.

Attention is focused on "Brick and Clay Record's" growth, at this time, particularly, because of the recent investigation of its circulation made by the special committee appointed by the Association of Manufacturers of Clay Working Machinery, appointed at their annual meeting last winter. At that time, the publishers of "Brick and Clay Record" cordially invited the Association to make an investigation of the books and records of the publication for the benefit of its advertisers. This formal report has just been officially distributed by the Secretary among the members of the Association, accompanied by the sworn affidavit of Walton, Joplin, Langer & Co., one of the largest and most important auditing firms in the country.

An audit of this kind is no small affair. It requires the work of several skilled accountants, continuing over a considerable period of time. An audit of the circulation of a great magazine does not consist simply of a count of its mailing list, for a count of this kind would be considered no more legal proof than would a statement of the publishers. The work, therefore, required a comparison of this mailing list with the record cards in the subscription index file. These cards are arranged by date of expiration, while the mailing list is arranged by states and cities. Such a comparison, therefore, involves much labor. On these subscription record cards are entered the payments made by the subscribers from year to year, showing the date of payment and the time covered by the payment of the subscriptions. The auditors, however, were not satisfied to accept this comparison as a verification but demanded proof that the entries on the cards were correct. This required a further comparison of the subscription payment entries on the cards with the cash books of the company, showing the receipt of the money as entered. It would seem that such a verification would be amply sufficient to meet all demands and to satisfy the most skeptical. This firm of auditors, however, pursues more than ordinary methods and to make the verification trebly certain, they demanded proof of the

receipt of the subscription payments, as shown by the cash book, and compared a considerable portion of the list with these cash book entries, verified by original remittance letters received from the subscribers. By order of the committee this audit was further verified by the auditing firm Searle & Nicholson, certified public accountants.

The manner of securing the audit being explained, it might be of interest, now, to analyze to some extent the figures and statements made in the report. First, will be noted the number of copies of the publication printed issue by issue for the first six months of the year. While the copies printed are, of course, circulated and the publication should be given credit for such circulation, as all copies sent out must be of value to the advertisers, yet there is a distinction drawn between the total distribution and the paid circulation. The total distribution of "Brick and Clay Record" for the first six months of the year was 89,800 copies being an average of 7,483 copies per issue or nearly 15,000 copies distributed each month. Giving no attention, however, to the distribution of sample copies and free copies, the figures of the paid circulation are sufficient in themselves to establish beyond a doubt the claims of "Brick and Clay Record" as the leading clay publication of the world.

The report shows an actual bona fide paid subscription list of 6,124. The report of the U. S. Geological Survey showing the number of clay working enterprises in the various states, gives less than 5,500 as the total number of clay working enterprises in this country. It is on these figures that the statistics are based showing the total annual clay products of the United States. Making allowance for errors in the Geological Survey lists and including all the potteries and clay mining enterprises, it yet can be seen that with its circulation, "Brick and Clay Record" thoroughly covers the entire clay industry of this country, and its publishers are conservative, therefore, in making their statement that this journal reaches 90 per cent of the active clay working plants now in operation in this country and Canada.

The influence of this publication is not confined by any means to the United States. It has become well known throughout the world and is now read by all the leading manufacturers of clay products in every country on the globe. A traveler, recently returning from a trip around the world, expressed his surprise at having found "Brick and Clay Record" in the offices of nearly all the foreign clayworking enterprises which he had visited. In Australia alone, "Brick and Clay Record" has some fifty subscribers, and it numbers on its list clay products brethren even in those far-distant countries of India, Siberia, China and Japan. In looking over the "Brick and Clay Record" list, one is impressed more than ever by the fact that in the clay industry there are no state

SEYMOUR WALTON, C.P.A.
J. PORTER JOPLIN, C.P.A.
CHARLES H. LANGER, C.P.A.

WALTON, JOPLIN, LANGER & CO.

CERTIFIED PUBLIC ACCOUNTANTS

TELEPHONE
RANDOLPH 4120

122 SO. MICHIGAN BOULEVARD

CHICAGO

NEW YORK OFFICE
165. BROADWAY

Kenfield-Leach Co.,
Publishers,
421-425 Plymouth Court,
Chicago.

Gentlemen:-

We hereby certify that we have verified the circulation of your semi-monthly publication, "BRICK AND CLAY RECORD," and found that from January 1st to June 15th, 1911 (six months inclusive) there was an average distribution per issue of Seventy-Four Hundred and Eighty-Three (7,483) copies, as follows:

Jan. 1st - 10,200	April 1st - 7,100
" 15th - 7,600	" 15th - 7,100
Feb. 1st - 7,100	May 1st - 7,100
" 15th - 7,600	" 15th - 7,100
Mar. 1st - 7,100	June 1st - 7,100
" 15th - 7,600	" 15th - <u>7,100</u>
Total	89,800

Average per issue - 7,483.

Upon verification of your mailing lists, files, original subscription orders, card indexes and cash books, we found a total of Sixty-One Hundred and Twenty-Four (6,124) bonafide paid subscriptions as of this date.

Yours very truly,

Walter J. Langer
Certified Public Accountants.

Chicago, June 15th, 1911



or international boundary lines but that we all belong to one big family.

In this connection, it is to be noted that the paid circulation of "Brick and Clay Record" was not secured through the giving to its subscribers of various premiums, but that the subscriptions were sent to "Brick and Clay Record" purely on the merits and value of that publication as a trade journal and without other inducement. There are many publications which in their eagerness to secure subscriptions, offer prizes or premiums almost equal in value to the publication itself, but the management of "Brick and Clay Record" has followed the policy that it did not want a man to subscribe, unless that man gave his subscription because of the value of the publication itself. The subscriber whose favor is bought with a premium or prize cannot be of much value to the publication. Unless a trade journal is worth reading because of the value of its contents, it can have little value to either its subscribers or to its advertisers.

The value of a trade paper's circulation depends upon both quality and quantity. While a large subscription list may be secured through special effort, sometimes such lists are not of as great value as smaller lists of more carefully selected names. In the case of "Brick and Clay Record," however, on its subscription list will be found the names of not only all the largest and most prominent clay working enterprises, but also nearly all of the brick and tile plants of small size, therefore, the publishers can honestly claim that "Brick and Clay Record's" circulation is SUPREME both in QUALITY and QUANTITY.

"Brick and Clay Record's" claim for supremacy, however, does not rest simply upon circulation. For nearly twenty years previous to the recent consolidation with "Clay Record," "Brick" has earnestly endeavored to advance the progress and development of the clay industry and to serve its best interests in every possible way. It has grown up with the industry, sharing its reverses and keeping pace with its development. Starting in 1894, as a little monthly about 10x7 inches in size, of only some twenty pages, it has grown in proportion to the industry which it serves. In 1896 it was enlarged to the present size of page and in 1905, the number of pages was increased. In January, 1911, its publishers purchased the "Clay Record," a semi-monthly which had been part of the industry for an even greater period of time, and consolidated the two journals, issuing them under the present title, "Brick and Clay Record," as a great semi-monthly. This development was only another step in the already established enterprising policy which the publication has followed since its foundation. That policy is spelled by the word—"Progress." A publication of this kind cannot stand still. It must grow or fall behind.

That a semi-monthly of the character of the present "Brick and Clay Record" was needed and wanted by the clay industry has been demonstrated by the growth of its subscription list. The publishers secured the names of all the manufacturers of clay products throughout the country and following a consistent and energetic subscription campaign, presented the merits of "Brick and Clay Record" to these manufacturers with the result that the subscription list soon grew to its present substantial proportions.

"Brick and Clay Record's" reputation, as the most up-to-date and progressive publication in the industry, is based upon the enterprise which it demonstrates in its editorial department. It is ever striving to give its readers the most valuable and important trade information possible. It is constantly looking for articles descriptive of modern clay working plants and for technical articles that will assist its readers in their manufacturing operations. Through its large corps of highly paid correspondents and through the

assistance of ten news bureaus, it is enabled to glean all the news of the trade throughout the country and it presents this news and information to its readers fresh and in readable form. This matter of fresh trade news is one of the chief advantages of a semi-monthly. In this twentieth century, business men do not care to wait a month for their information but demand their news promptly and they secure the kind of service they want through the semi-monthly, "Brick and Clay Record."

Because "Brick and Clay Record" has reached its present high state of development and success, does not signify that it will not keep right on growing better and stronger. The publishers do not believe in the stand-still policy. Their plans now provide for the constant improvement and betterment of "Brick and Clay Record" reading columns and its facilities for gathering the trade news and information. Many interesting features are planned for next year, which will make the publication of greater value than ever before to its readers.

Along with this story of progress, it might be well to mention here the fact that "Brick and Clay Record" will soon change its Chicago headquarters from 425 Plymouth Court, the home which it has occupied for so many years, to larger and more commodious quarters at 441 Plymouth Court. The publication is owned and printed by the Kenfield-Leach Co. which in its new quarters will have more than double its present capacity, making it one of the largest and most complete printing establishments in the country, devoted exclusively to the publication of high class trade journals and catalogs. The offices of "Brick and Clay Record" will be more complete and convenient than heretofore and the publication will be better able to serve its constituents. In its new quarters, "Brick and Clay Record" will be "at home" to all "clay men" visiting the city. Drop in to see us.

BLACK HAND METHODS.

In line with the publicity which "Brick and Clay Record" has heretofore given the despicable methods employed by some "would-be grafters" in bleeding machinery men as well as employers, the following letter will be of interest. It is written by a superintendent of a brick plant to a prominent manufacturer of dry press brick machinery. If it were not such a villainous attempt at hold-up, the proposition that the machinery concern pay the writer of the letter \$1,500 graft would be humorous. Following is the letter:

Dear Sirs:

As I have the possibility of the sale of a dry press brick machine, also a tile machine, I am writing you for prices on both. If I land this sale I want \$1,500, or if only the brick machine \$1,000, so make me prices so you can allow my commission.

Hoping to hear from you soon in regard to this matter I remain.

TWO SHOWS IN ONE.

An amalgamation has been entered into between the associations in charge of the National Building Material Exhibition and the Real Estate and Ideal Homes Exposition, two important allied interests, which put on important expositions in New York City. By this agreement the two associations will be combined in one great exposition, to be held in Madison Square Garden, Oct. 7th to Oct. 14th, inclusive.

This combination will also hold an exposition in the Colossum of the new Grand Central Palace from March 30th to April 6th, 1912. These associations, offering as they do an opportunity for the exploitation of clay products, should have the support of this industry.

IDEAS WANTED BY SHOW MANAGEMENT.

In collecting exhibits for the Clay Products Exposition it is important that every use of clay be shown and that the public be convinced of the superiority of clay for the use to which it is put. The co-operation of the entire



Handsome Terra Cotta vase and Pedestal, made by the Philadelphia Terra Cotta Works. Type of attractive exhibits which will add to the beauty of the Clay Show.

clay products industry is asked in this matter. If you know of any novel or unusual use being made of clay, you are requested to write to the Clay Products Exposition Company, 815 Chamber of Commerce Building, Chicago, concerning same.

If you have any ideas which can be used to make the Clay Products Exposition more complete, more interesting, more forceful, or more convincing, you will confer a favor by writing the management as early as possible on the subject.

NEW COMPANY DOING WELL.

The Ohio Face Brick Co., recently chartered, notice of which has appeared in these columns, was organized at Fredericksburg, Ohio, on June 28th, and purchased the plant of the Ohio Terra Cotta Brick Co., assuming possession immediately and began operating the plant on July 1st, since which time the plant has been running steadily and has been making some very good sales of its high grade face brick in Ohio, Pennsylvania, West Virginia, Kentucky, Illinois, Michigan and Wisconsin. It is turning out a strictly high grade article, that is well received by the trade, wherever it is offered, and a very successful career is predicted for this company. This company's plant is strictly modern in all its equipment and arrangement,

and has a capacity of six to eight million brick per year, depending on the character of product, and has practically inexhaustible deposits of high grade fire clay and shale, with a sufficient quantity of coal on its own property to burn its product.

of business in Ohio, Pennsylvania and Kentucky and are successful in the manufacture and sale of brick of various kinds and thoroughly familiar with the requirements of

Its directors and officers are practical brick men of wide experience; they are all actively engaged in this line the trade throughout the country.

The following are officers and directors of the company: J. B. Hammond, president, Bolivar, Pa.; L. P. Haldeman, vice-president, Portsmouth, O.; A. J. Peterman, secretary, Fredericksburg, O.; John McGrotty, treasurer, Akron, O.; W. A. Shoemaker, general manager, Columbus, O.; Henry K. Leighow, Haldeman, Ky., and C. W. Hammond, Bolivar, Pa.

George W. Shoemaker is superintendent of the plant at Fredericksburg, and the general office is located at Columbus, Ohio, in direct charge of W. A. Shoemaker, general manager, and John McGrotty, treasurer.

A sale is the thin edge of the wedge. The work is not over until the bill is paid. Up to that point a sale is a loss. Do not forget that.—Wanamaker.

BACK ON THE JOB.

The many friends of Mr. Robt. A. Whiston will be pleased to know that he is back on his old job as Eastern representative of E. M. Freese & Co., of Galion, O., in charge of their office in the Hudson Terminal Bldg., New York city.

Mr. Whiston has practically recovered from a severe



R. A. Whiston of the E. M. Freese & Co.

illness, which has taken him away from his work for the past six months. He is one of the best known men among the clay machinery salesmen and is considered one of the most reliable, trustworthy and efficient men in the trade. He has a host of friends throughout the industry.

“Mr Clayworker—This is YOUR SHOW”



In nothing does the old adage “God helps those who help themselves,” apply more truly than to the present condition of the clay industry. The clay products manufacturers, throughout the country, have evidently come to realize that they have not been helping themselves as much in the past as would have been to their advantage and they have awakened to more energetic methods for promoting their interests. This is evidenced through the splendid work being accomplished by the Building Brick Association of America and by other organizations of the clay industry.

It must be admitted, however, that in the slang of the day, one of our worst competitors has been “putting it over on us” for several years past, through the holding of great expositions in the industrial centers of the country, exploiting the use of its materials. We refer to the cement shows which have been held in New York and Chicago annually for several years past.

The purposes and advantages of such expositions must not be misunderstood. They cannot be considered as local propositions. Not only do these cement shows bring hosts of interested people as visitors from all over the country, but their chief harm to the clay industry has been through the publicity which cement products have received in the newspapers and magazines as a result of the displays and demonstrations which they make at these annual expositions. It is scarcely necessary to refer to the immense amount of freely given articles appearing in all the magazines and papers at the time these shows are held. All these articles have tended to educate the public mind to a false idea regarding the value of cement and concrete for certain purposes.

The manufacturers of clay products throughout the country can, therefore, feel fortunate that the opportunity has at last come when they may be able to hold their own with the cement people in this matter of publicity. Plans are now fully developed for the holding of the great clay products exposition at the Coliseum in Chicago next March; and the time is none too long for the clay products manufacturers to make their plans to insure the success of this enterprise.

There can be no question whatever as to the practical

value that this show will be to every manufacturer of clay products of whatever kind, in this country. Not only will hundreds of thousands of people be impressed by a personal visit to the show and a practical demonstration, before their eyes, of the beauty and superior merits of clay products, but the country will be flooded with literature and newspaper and magazine articles, describing the wonders of the show and incidentally giving a boost to all forms of clay manufacture. In this publicity and the following increased popularity of burned clay, all members of this industry will share in the benefits.

While the show is now a certainty and those who have invested money in promoting it are now so far committed that they must go ahead with their plans, and while there have already been a sufficient number of applications made to insure a representative display of clay wares, yet manufacturers of clay products must not conceive the idea that that they can sit back in their easy chairs and “watch the parade go by.” They cannot shift the responsibility for the success of this show on to other shoulders or expect that it will accomplish all that is possible for the clay interests, unless they give it their heartiest co-operation and practical support.

If necessary, the managers of the show can secure the support of allied interests to take floor space in the Coliseum and thus aid in meeting the enormous expenses. It is the desire, however, of those interested in the success of the show, to make it a purely clay products exposition and they, therefore, hope to be able to fill all the floor space with actual exhibitions of clay ware, arranged in such artistic designs and in so beautiful a manner as to attract the attention of the entire country and to merit illustrated articles in all the leading magazines.

The cost of putting on a show of this kind is much greater than those not acquainted with the subject might suppose. The rent of the Coliseum building alone is \$7,000. It will require an expenditure of \$6,000 to decorate the interior properly, install suitable lighting facilities, etc., and the actual expense of operating the show, in labor and other items, will be fully \$500 per day. Some \$10,000 will be expended in advertising the show throughout the country, through newspapers, magazines and

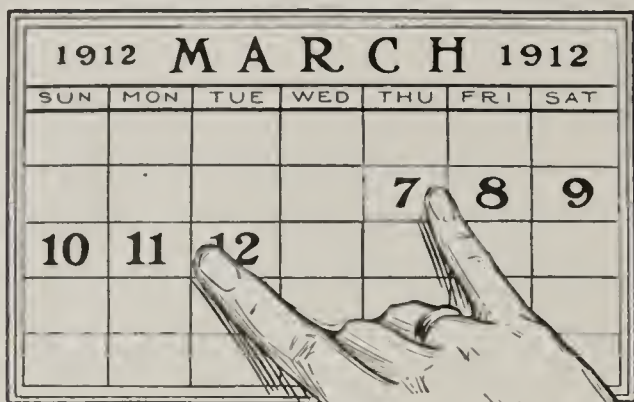
through stamped and printed matter. In addition to this, there will be the expense of a corps of trained men to look after the details of the various departments.

It must be understood that all sense of personality has disappeared from this proposition. While those who have advanced the money to make the show possible deserve the thanks of the industry, yet their identity as individuals is lost in the one big fact of the show itself. There is only

It is time, gentlemen, that you let the faithful, hard-working secretary, Mr. F. L. Hopley, at 816 Chamber of Commerce Bldg., Chicago, know what you intend to do. Write him at once.

The busy man running a clay plant often finds pleasure and profit in his work and does not worry much about

CLAY PRODUCTS SHOW COLISEUM, CHICAGO



**THIS IS YOUR SHOW
HAVE AN EXHIBIT
BE SURE TO ATTEND
GET OTHERS TO GO**



Facsimile of Artistic Cover of Clay Show Prospectus Recently Sent Out by the Management.

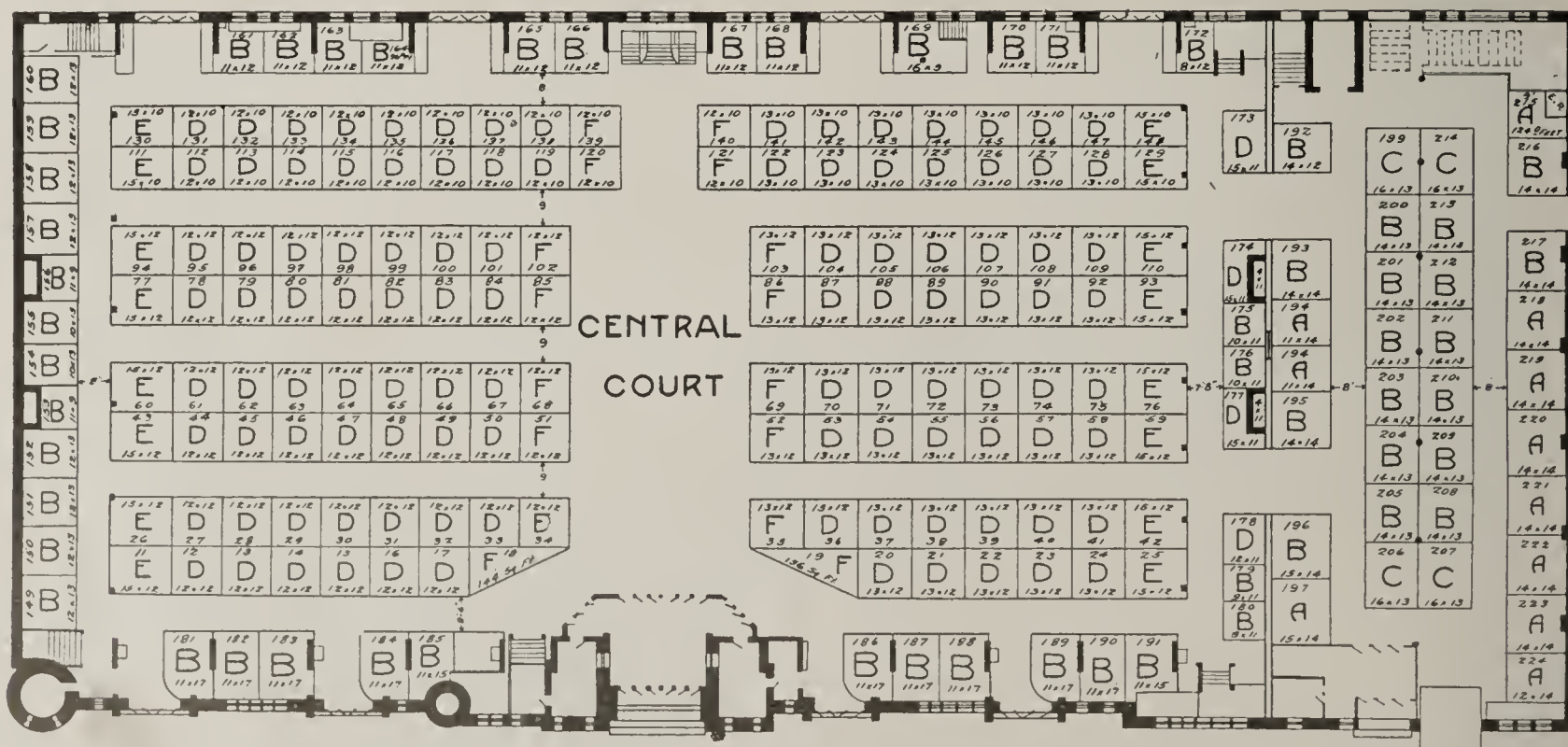
one thing to be considered and that is the success of the show. To this end, the aid, co-operation and active assistance of every manufacturer of clay products is needed. In the words now becoming so popular: "This is YOUR show, gentlemen."

What is wanted now is the decisive, active support of those who can and will make exhibits of one kind or another at this exposition. Whether the exhibits be large or small, every manufacturer of clay products who turns out material which he is not ashamed to show to the public, should have some kind of representation on the floor of the Coliseum, in his own interests as well as because of his desire to help in the good cause. He should not stand back and "let the other fellow do it all." He should at least show his good will, if to no greater extent than to provide for the showing of a single brick.

relaxations and vacations, but as "all work and no play makes Jack a dull boy," clay manufacturers should plan to take a week's real vacation next March and attend the greatest clay show ever held in Chicago.

BIG BRICK CONTRACT.

What is said to be the largest single contract for the delivery of common brick ever given out in Philadelphia has been awarded to the Brick Selling Co. of Trenton, N. J. The contract calls for the delivery of 10,000,000 brick before Jan. 1, 1912, to be used in the construction of the Boys and Girls High School in West Philadelphia.



Ground Floor Plan of Coliseum as Laid Out for the Clay Show.

DRAINAGE IN EASTERN ENGLAND

Comparison of English and American Drainage Methods, Giving Results of Observations Made by C. G. Elliott, C. E. Chief of Drainage Investigations, U. S. Department of Agriculture, During a Trip Abroad

(Continued from Our Last Issue.)

A few further observations and reflections upon this great farming district of England will bring out the agricultural situation more clearly. The administrative organizations for maintaining the drainage works, which are now fairly satisfactory, are the outgrowth of countless failures which represent great waste of effort and loss of money for a century or more. Authority for every reclamation project or improvement of works involving the expenditure of funds was obtained by special acts of Parliament. The failure of a system to give the drainage required, the destruction of a bank or sluice, or the deepening of an outfall became the subject of a petition to Parliament for authority to reconstruct or re-

than usual precipitation. The crops raised are the "cold land" shallow rooted plants, viz., grasses, grains, and root crops, yet wet seasons affect their growth more adversely than should be the case on well-drained lands. Small fruits, especially currants and the famous gooseberry, flourish, but orchard trees are scarce and of a sorry appearance on the fen land.

Fuel Peat.

Among the products of the peat land is the peat itself, which is dug, dried, and used for fuel. The peat bogs which are thus utilized occupy the lower portions of the fens and they are becoming lower each year as the peat is removed. The surface is too low to drain by gravity



Fig. 8. Results of Drainage—Transferring Hay Brought from the Fenland to Cars at Littleport.

pair the work and to assess the cost upon the property. Engineers were instructed to inquire into the causes of defective drainage and recommend an effective remedy. Their reports were sometimes by no means assuring or encouraging, and their recommendations were frequently rejected or followed only after being materially modified. During the period of final reclamation nearly every engineer of repute left his mark upon some part of this great level, prominent among them being Cornelius Vermuiden, the Dutch engineer; Sir John Rennie, Thomas Telford, and Sir John Hawshaw.

The lands are fertile and produce more abundantly than any in England, yet the fen farmer has his losses and disappointments. As previously mentioned, the drainage system has been deepened considerably during the last forty years; still there are abundant indications that the lands are not drained with sufficient thoroughness, especially in the peat regions, and that there are not enough field ditches to make the land dry during seasons of more

into the ditches which are provided for the fields, so that small windmills which operate scoop-wheels are used to raise the water out of the small ditches of the bogs into the drains of the district. The privilege of taking one cutting of peat from the land is given to turfmen for \$100 an acre, the peat to be removed in four years. At the expiration of that time it is leased for another cutting. The workman uses a wooden spade with steel cutting edge with which he cuts brick 3.5 x 4.5 x 15 inches and lays them one upon the other at the side of the trench (Fig. 7). After several days they are turned and left on edge, with spaces between them for drying. When dry they have shrunk to a size 2.75 x 3 x 11 inches and are stacked in large piles or wheeled to the lode near by, placed upon a boat, and shipped to the nearest town. The workman receives 12 cents for 60 dry brick delivered upon the boat. The poorer people use this fuel quite generally, and while it does not give a cheerful fire, it furnishes sufficient heat for cooking and for warming the house.

Cost of Maintaining Drainage Works.

The annual cost of maintenance is not uniform for the different fens nor the same each year for the same fen. There are wet and dry seasons, and the cost of pumping necessarily varies with the season. In commenting upon this subject Mr. Wheeler says that the rainfall in the recent wet years in the fen land may be taken as 32.39 inches, of which 17.52 inches were due to six winter months, September to February, which gives an average daily amount of 0.097 inch. Taking the periods of excessive rain which occurred during the same time extending over six to thirty successive days, the greatest average fall per day was 0.41 inch for fourteen days in October,



Fig. 9. Farm House on the Reclaimed Fens.

1883, and November, 1885; the next highest being 0.29 inch for six days in February, 1883. The average mean rainfall during the twenty-one floods since 1852 was 0.26 inch for seventeen days. He further remarks that the average annual rainfall can not be taken as a guide, for the drainage system, to be effective, must carry off the floods of wet years. This quantity which the system should provide for, as mentioned previously, is that due to a continuous rainfall of 0.25 inch in twenty-four hours, making no deductions for seepage or evaporation. Mr. George Carnichal, of Ely, an engineer of thirty years' experience in the fenland and adjoining levels, regards that amount ample and designs his works upon that basis. The cost of pumping with well-designed scoop-wheels or with centrifugal pumps, as determined by the records of several plants, is 2 cents per foot of lift per acre. That is, a lift of 10 feet costs 20 cents per acre.

A tax of \$1.25 an acre is levied by the commissioners of the Swaffam Fen, (11,000 acres,) for the maintenance of drains and lodes and for pumping. This is a larger amount than is levied upon some other fens. A small tax is also levied by other commissioners for maintenance of outfalls and navigation channels upon which the security and efficiency of the district drainage works depend. The part of the Great Level, termed the alluvial portion, is firmer land, settles less, and is sufficiently high to be drained by gravity through gates which permit an outward flow at low tide. Interior drains are placed closer together than in the peat lands and drain-tiles are used with excellent effect.

General Appearance of the Lands.

The southern portion of this Great Level, as it is frequently called, furnishes a pleasing panoramic view from the towers of Cambridge. This scholastic city, with its twenty-one noted institutions of learning, occupies an eminence of 50 feet above the sea near the south end of the level. The river Cam winds through the quaint town

and then down across the fen land, joining the Great Ouse near the town of Ely. As it flows down the slope from Cambridge, a series of locks control the stream, upon which pleasure launches frequently pass. The extensive and convenient water transportation system by means of the rivers, lodes, and drainage canals at one time in active operation has been permitted to fall into disuse, because the traffic did not pay sufficient tolls to keep the works in repair. Supplies required by the farmers are still carried on small boats, but the volume of this business is insignificant.

The Isle of Ely, with its city of the same name and wonderful cathedral, situated upon an eminence 80 feet above the sea, occupies a commanding place in the midst of the fens. The city of Spalding, on the River Welland; Boston, on the Witham, and Kings Lynn, on the River Ouse, are notable places within the boundary of the fens. Each is reached by boats from the sea and is also touched by the railroads, which afford quick transit to London.

The expanse of agricultural land reminds one of the prairie farms of the United States, with the exception of that quiet and ancient appearance so characteristic of old countries. The thatched roofs of the dwellings in the little villages frequently found adjacent to houses of more modern appearance, the winding streets, the modest cottages with rose trees at the door, and the ditches so essential to the prosperity of both village and country, lend a charm difficult to find elsewhere.

The price of farm lands and rentals is fairly high, yet such property is not considered an attractive investment by capitalists. The "freeholders," or owners of small farms, are prospering, as are also the tenants, though the premises occupied by the latter lack the thrifty appearance which usually characterizes those of the resident farmer, one of whose houses is shown in Fig. 9.



Fig. 7. Drying Fuel Peat on Swaffam Fen, England.

Rentals, as might be expected, are variable. Fields in the fens are frequently leased for a lump sum instead of by the acre, the owner paying the annual drainage tax, which in some instances is \$2.00 an acre. Farm rentals, near Boston, are \$7.00 to \$10.00 an acre for 150 to 200 acre farms. The same rates prevail in the vicinity of Littleport, where the lands are considered worth about \$150 an acre. While the lands are productive, and remunerate owner and tenant fairly well, there is room for a much greater development and a more substantial profit than is now realized from their cultivation. More perfect drainage is needed in many places and also irrigation at times which may be easily provided by utilizing the water from the lodes.

(Continued in Our Next Issue.)

CLAY CONSERVATION IN THE EAST

Work of Clay Testing Department of the State University, at Alfred, N. Y., Proving a Helpful Factor in Assisting Clay Manufacturers to Eliminate Waste in Clay Mining and Manufacturing

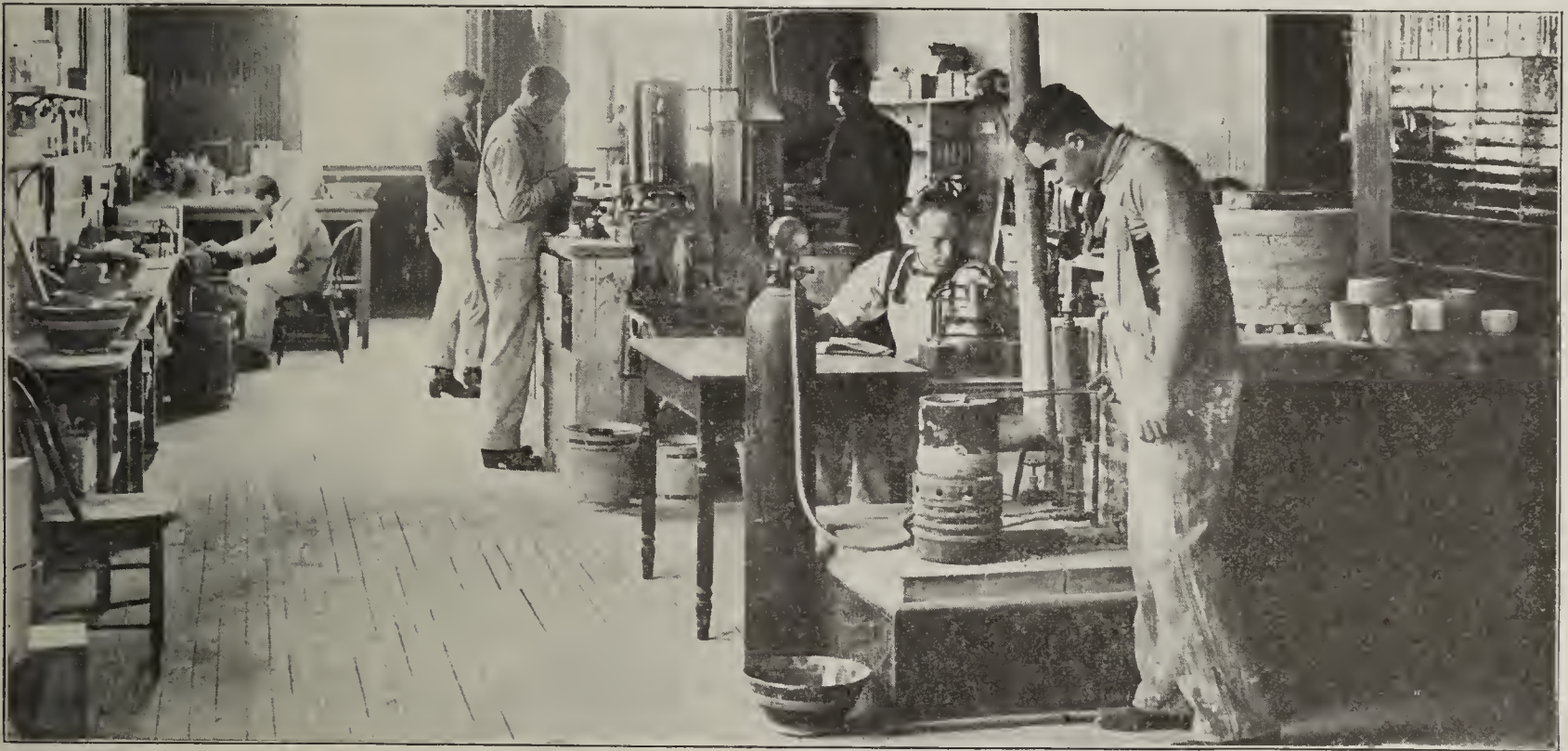
By Allen E. Beals

The recent formation, in New York, of a new common brick selling company was made necessary for several reasons, among them being the alleged draining of the clay beds to such an extent that unless the supply, in the Hudson valley, be conserved it will be difficult to supply this most essential building material to future New York in anything like adequate quantities. That there is some reason for systematic conservation with reference to the clay deposits in the so-called North River district in the East, is shown by the action of the De Noyelles Brick Co. at Haverstraw in releasing what remains of its old clay banks and taking all the clay it needs for manufacturing purposes by dredge from the bottom of the Hudson river.

In addition to this, further evidence of the necessity for guaranteeing a sufficient supply of clay for brick making in

efficient fireproofing material is, of course, burned clay. If, therefore, the visible supply of raw material in the clay beds adjacent to New York is diminishing, it behooves manufacturers to produce only such quantities as will actually be sold and so to arrange their shipments that they will be able to procure the best possible price for this commodity. Here is where the greater New York Brick Co. can, if it chooses, do a great deal of good for the public weal.

The situation in New York has already arrived at a point where it is necessary for many of the manufacturers in the district to purchase their tempering material instead of taking it from the overlaid on the beds of clay. The day of a home wood supply, for burning purposes, has long since passed, and now it is becoming a question of how long it will be before certain manufacturers, at least, will have to



Free Clay Testing Laboratory of the New York State School of Clayworking and Ceramics

the not far distant future, is in the increasing scope of the usefulness of the New York State School for Clay Working and Ceramics, at Alfred, N. Y., which has joined in the movement to find reserve clay deposits by offering to make tests of any clays found in New York state and to furnish advice as to the use of clay, free of charge.

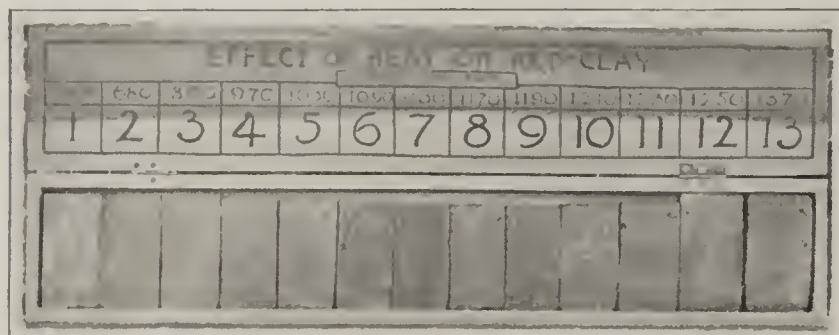
While this article is not designed to alarm the Hudson river brick manufacturers or builders in New York city and vicinity, it is intended to show that the movement for the conservation of natural resources, especially in relation to clay in New York state is just as important as is the movement to conserve the coal and forest lands in the great Northwest. In fact, the need is greater, as far as brick is concerned, because as building operations as a result of vast developments now in progress in the Metropolitan district increases, so the demand for fireproof construction will increase, and fireproof construction is not practicable without low-priced material. The lowest priced, yet most

purchase their clay from other companies. Some of the tile manufacturing companies both in the Hudson river valley and in the Raritan valley in New Jersey are now forced to buy some of their clays.

The value of the output of the clay beds in New York state for one year has been placed by the United States Government reports at \$12,000,000, but this output value is constantly growing larger, because the movement for the conservation of the forests has an important ally in the production of clay wares, for as the use of lumber decreases, the use of brick, tile and terra cotta must increase. This movement has not only been taken up in New York state but New Jersey, Ohio, Illinois, Iowa and Kansas have also taken up the movement by establishing clay working schools and testing laboratories to encourage the development of the clay industry along scientific and, by no means the least important, economical lines.

In New York state alone three companies have been driven

to the river to get clay. In every case except at the DeNoyelles plant, from six to twelve feet of silt must be removed before clay can be dug and this element is a constant annoyance, especially after every flood. In the case of the Haverstraw plant, the sweep of the river around a bend has cleaned off the bottom leaving the rich blue clay exposed to the dredge. In the other yards where clay is being taken from the river bed, it has to be seasoned for a year, but in the case of the first mentioned plant, it can be used directly it is removed from the river.



Showing Effect of Heat on Brick in Various Stages of Burning.

It was the action of these companies in seeking new clay fields which inspired the framers of the new Greater New York Brick Co. to adopt a conservation plan and, by governing shipments so that they will be in conformity to the actual market conditions, stop the reckless waste of clay that has been going on for centuries. When it is stated that even a small Hudson river plant uses from fifty to eighty tons of clay a day, and there are many plants which run this daily clay consumption up to 500 tons and over, aside from the vast quantities of clay daily consumed by the 250 plants in the state, some idea of the drain on the state's clay deposits can be gained.

Prospectors in the clay belt near New York, in the Hudson valley, are almost as numerous today as they were in the days of Sutter in California and the clay testing laboratories, at Alfred University, are busy trying out samples taken from various beds. The accompanying illustrations show a scene in the laboratory during a test and a glimpse of the finishing plant where test brick are actually molded and burned.

In the department of clay testing a most thorough analysis of the various clays is made. The plasticity is tested by working up a sample of the clay with water so that its working quality may be estimated. No machine can do this as the experience of the worker is the best guide. A certain amount of sand or grit is desirable because a clay so constituted will dry and burn more safely than when this is absent, but too much sand will make the material short and cause it to crumble. The plastic quality being sufficient, the shrinkage or contraction of the clay in drying is measured. This is variable. Some clays will shrink as much as one-sixth, as the water is dried out. When this occurs it makes the clays unsuitable for manufacture. It is generally considered that about one or one-twelfth inch to the foot is as much as a clay should shrink in drying.

Then the dried clay is passed on to the kiln for the final trial. This is the extreme test, for a clay may pass all the others and fail in this one. In the heat of the furnace the clay first loses its chemical water. It is combined in the clay itself and can only be driven off by a red heat. When this is accomplished the clay changes color and begins to shrink. It grows denser as the heat increases and reaches the solidity which is expected of a building brick, being at this time the brightest red that the clay will show. From this point, the color grows darker and the clay more solid until it acquires the hardness of a paving brick.

This is the point at which quality ceases to be developed, for any increase of heat will cause the clay to swell up and finally become bloated. It is then on the point of melting down and in a little hotter fire it will flow like molasses.

In the accompanying illustration, a brick that has reached this stage of burning is shown floating in a bowl of water. It was taken from one of Terry Brothers' kilns in the Newburgh district. This story is vouched for by Frank L. Holmes, Terry Brothers' New York agent:

The brick was one from a kiln which was being looked after by a burner who had been imbibing the contents of a bottle of liquor. During his slumbers, the kiln overburned. He unloaded the kiln later and planned to take the damaged brick to the water side and slyly dump them into the river. When he had completed the task of removing all the overburned brick, he looked into the water and became sober immediately when he saw every one of the brick he had tried to blot out from record and his memory, bobbing up serenely on the surface. Whereupon, he resolved never to drink again.

The accompanying chart shows a good sample, burned at the university, at the various stages of burning. No. 1 is the unburned clay, the color a greenish yellow; No. 2 at 680° C., light salmon; No. 3, 890° C., salmon; No. 4, 970° C., dark salmon; No. 5, 1,030° C., light red; No. 6, 1,090° C., medium red; No. 7, 1,130° C., finish red (building brick); No. 8, 1,170° C., dark red (sidewalk brick); No. 9, 1,190° C., brown (paving brick); No. 10, 1,210° C., chocolate (overfired, swelling begins); No. 11, 1,230° C. (swelling continues, brick is honeycombed); No. 12, 1,250° C., brick is bloated and misshapen; No. 13, 1,370° C., brick on the point of melting. The temperature recorded on the brick floating in the bowl was about 1,500°.

But even in the best of clays, foreign matter will appear from time to time. This is especially true of the plants that



A Melted or Overburned Brick Floating in Water.

take their clay from the river bottom, where clam shells are sometimes molded into a brick causing it to break, when heated or to crack when cooling. In the Hudson river district iron pyrites are not, as a rule, troublesome, although, once in a while, a batch will be taken from a kiln more or less seriously blistered. The accompanying illustration shows the action of iron in a brick taken from a Terry Brothers kiln and shows the quantities of iron particles found in isolated parts of a clay bank. When these various clays are mixed up in the pug mill, pyrites may find lodgment in a number of brick, and, in fact, a large proportion of a kiln charge has been found defective after burning, on more than one occasion.

In the Raritan river district, in New Jersey, the troubles encountered by the presence of iron in the clay are serious, but this has been overcome in some of the largest plants to a considerable extent by an admixture of other clays and a secret elimination process. Where there are large quantities of iron there is also sure to be more or less sulphur, but a way has been found, at this plant, by



Brick, in Seventh Row from Bottom of Kiln, Which Melted During the Heating Process.

scientific mixing of clays and shale, to overcome this trouble and to produce a remarkably smooth, well burned brick, despite clay troubles that to a less resourceful company would have proved serious.

The truth is, whether it be generally known and acknowledged or not, that the clay beds around New York, must be conserved. They have been over exploited in the past. Too much brick has been manufactured, hence brick has been sold in the market at prices all out of proportion to the value of the clay beds and the amount of money invested in brick manufacturing equipment.

Who could conceive of any other than a brick manufacturer operating an equipment representing an invested capital of half a million dollars and selling the product for more than a year, at a 5 per cent profit and at times without any profit at all? Yet this was the experience of one of the largest manufacturers in the Hudson river district. The reason? Because the clay had to be hauled a greater distance and because of its inferior character and the additional fact that it lay deeper in the earth, made the cost of manufacture fifteen per cent. more than it cost to produce brick at this plant only five years ago. The overlaid could no longer be used because it had been worked out and sand and quartz had to be purchased from another company. The location of this plant also made the cost of coal extra heavy.

This may be said to be a typical case of the brick plants along the North river, hence it is not at all probable that before many years the minimum wholesale summer price for common Hudson river brick in the New York market will be \$6.00 instead of \$5.37½ that it has reached this year.

Charles F. Binns, director of the New York State School of Clay Working has long seen the need of greater conservation of the State's clay deposits and a more scientific mining and handling of it to eliminate the waste. The work of the school is directed toward this end and he is

co-operating in every way to bring the brick manufacturers to a more convincing realization of the importance of clay conservation in the Hudson Valley.

THIRD HIGHEST EDIFICE.

The Woolworth building, the forty-five story building designed by Cass Gilbert, which is to cost \$5,000,000, and stand on Park Place, New York City, is to eclipse the Singer building in height, and is expected to prove an ornament to that city.

It will be the third loftiest structure in the world, and second in America. It will have a swimming pool in the basement, gymnasium and running track on the roof.

It will front 105 feet on Broadway and 197 feet on Park Place, and will be 625 feet high. Only the Metropolitan building is higher, having seventy-five feet advantage. The Eiffel tower has still greater advantage, being 985 feet high.

The facade is to be Gothic in type. The vertical lines will be relieved at stages by horizontal lines of Gothic treatment. The main building will be twenty-six stories high. The tower, continuing nineteen stories, will be eighty-six feet square, twenty more than the Singer tow-



Cutting Table in Clay Testing Laboratory.

er. The upper section will be treated in four stages, containing six stories. There are to be no blank walls.

The foundation will go 130 feet to bed rock. Below the sidewalk will be three basements, or three stories. It will be next to the largest caisson job ever attempted in New York. The site area is 18,500 square feet, and the ground cost \$2,000,000.

NORTH COLLINS SHALE BRICK CO.

North Collins, N. Y., has cause to be thankful in having the brick plant of the above company in operation again, after a lapse of four years, since the destruction of the plant by fire. The company is composed of four Buffalo brick manufacturers, and is known as the North Collins Shale Brick Co., with offices at No. 7 Builders' Exchange, Buffalo, N. Y. The officers are William J. Graap, president; Henry Bender, vice-president; John

ing to the superintendent's ideas. The burning requires from 11 to 13 days, from start to finish, turning out 98 per cent hard brick.

The loading of brick is done by wheelbarrows into cars, on siding, which is depressed so that there is no up-hill wheeling, the floor of the cars being on a level with kiln floor.

The buildings consist of machinery and dryer shed,



Rainy Day Snapshot of the Plant of the North Collins Shale Brick Co.

E. Schuesler, secretary, and John Dietschler, treasurer, who are also members of the Queen City Brick Co., Buffalo, N. Y.

The property consists of nine acres of land adjoining the Erie Railroad; the plant proper, however, occupies less than an acre. The shale is of a black carbonaceous

65x144 ft.; storage shed and pan house, 30x100 ft., and a brick engine house, 42x18 ft.

The power for the plant is furnished by two steam boilers (horizontal tubular type), one 100-h. p. and one 80-h. p. The engine is a 200-h. p. Erie City Iron Works automatic.

The plant which was destroyed by fire several years ago was reconstructed last year, and the first car of brick was shipped last September.

The entire plant was constructed under the supervision and management of the superintendent, W. P. Haake, and speaks for itself as to his capabilities.

The company anticipates a good year's business, and



Engine Which Makes the Wheels Go 'Round.

substance, and is blasted and loaded by hand labor into one yard (Atlas) side dump cars, which are hauled to the storehouse or pans by cable hoist, and fed into two Stevenson 9-ft. dry pans, and passing over two Freese piano-wire screens into a large storage bin 10 ft. square by 19 ft. in depth. The bin feeds onto a belt conveyor, which conveys ground shale to a Model K Freese combined brick machine. A Freese automatic cutter is used for side cut brick of the large type, cutting 25 at a time.

From the delivery belt they are loaded onto single deck cars (Ohio Ceramic Eng. Co.'s make), each holding 532 brick.

The drying of brick is accomplished through the use of a six tunnel Pittsburg hot air dryer, holding 42,000 brick, with drying capacity of 30,000 brick in 24 hours. The dryer is to be enlarged, and three more tunnels added, affording ample drying capacity for 40 to 50 thousand brick per day.

The kiln battery consists of four square and one round down-draft kilns, the squares holding 180,000 each and the round one 100,000.

These kilns are not of patent type, but built accord-



Corner of the Machine Room.

will be in fine shape to attend to all orders, large and small, as they intend to operate throughout the entire year.

BUYS TRAIN LOAD OF TILE.

The Brown Builders Supply Co. of Houston, Texas, has secured the contract for a train load of hollow clay building tile to be used in the construction of new buildings at Port Arthur to replace those recently destroyed by fire. The contract calls for 800 tons of material, which will be loaded into thirty cars and will cost in the neighborhood of \$7,500.

During the past few months many improvements have been installed at the brick plant at Denoigh, N. D., and work has been started for the season.

THE VALUE OF A NAME

A Review of the Growth and Development of Freese Clay-Working Machinery and a Little Description of the Home Factory Where It Is Made

In the march of civilization, there must always be pioneers to blaze the way. One of the foremost pioneers in the clayworking industry is E. M. Freese, of Galion, O., who has made the Freese machinery such an important factor in the development and progress of clay products manufacture.

Mr. E. M. Freese, head of the E. M. Freese Co., was one of the founders of the firm of Fate & Freese, who began business in Plymouth, O., in 1881. This firm was dissolved in 1889 and Mr. Freese started in business for himself at Plymouth and in 1891 removed to Galion, O., where he established the enterprise which has grown to its present large proportions.

Mr. Freese has tirelessly studied clayworking problems

eral manager, Mr. B. E. Place, who has been identified with this concern for the past 22 years, moving with Mr. Freese from Plymouth to Galion and growing up with the business. Three stalwart young men, honorably bearing the Freese name, are already part of the working force and will in due time become important factors in the Freese organization. They are Mr. H. H. Freese, who is a graduate of the Case School of Applied Sciences, who has for some time been the mechanical engineer of the Freese company, his service having proven of great value in the development of the Freese line of machinery; Mr. A. J. Freese, who connected himself with the business last year, a graduate of Ann Arbor College and since his entry into business, has given considerable attention to



Home of the Freese Machinery, at Galion, Ohio.

and has endeavored from his early identification with the industry to develop new lines and to originate better methods. He has constantly sought to make two blades of grass grow where only one grew before. E. M. Freese & Co. have been leaders in bringing out many important improvements in clayworking machinery and the products of their factory are now found in successful operation in some of the most important clayworking plants in every state of the Union and in Canada, Mexico and other foreign countries. Their business has always been conducted along conservative lines and on a thoroughly substantial financial basis.

The firm of E. M. Freese & Co. is well known throughout the commercial world, and especially in the clay industry. While the main offices are at Galion, O., the company maintains branch offices in New York, St. Louis and Pittsburg.

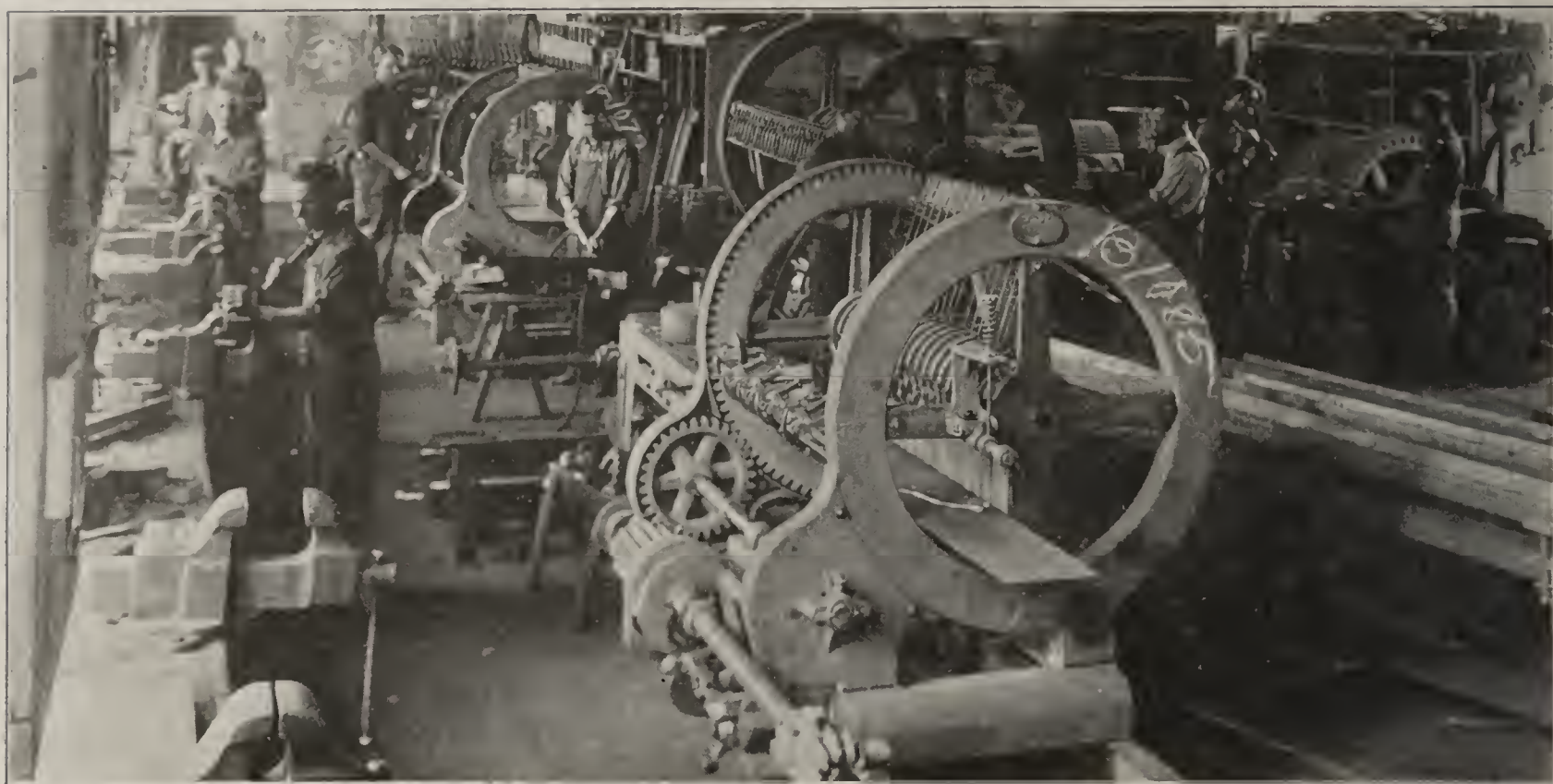
The Freese business organization has many elements of strength. Mr. Freese has for his right hand, as gen-

the sales department, and the third son, Mr. H. E. Freese, who has just concluded his studies at the Case School of Applied Science and has actively entered into the business.

As can be seen by the accompanying illustrations, the Freese plant, at Galion, is extensive and imposing in its character, it being one of the chief industries of this thriving Ohio village. The main building is a double structure substantially built of brick and three stories in height. It has a frontage of over 200 ft. and a side length of 125 ft.

The business offices are commodious and conveniently arranged in the corner of the ground floor of the main building. All departments are within easy access. The lower floor of the largest portion of the main building is the principal erecting floor and machine shop, having a floor space of 150 ft. in length by 50 ft. in width. Here are located all the modern perfected machine-tools required in the manufacture of clayworking machinery, and many specially made tools designed for the particular needs of

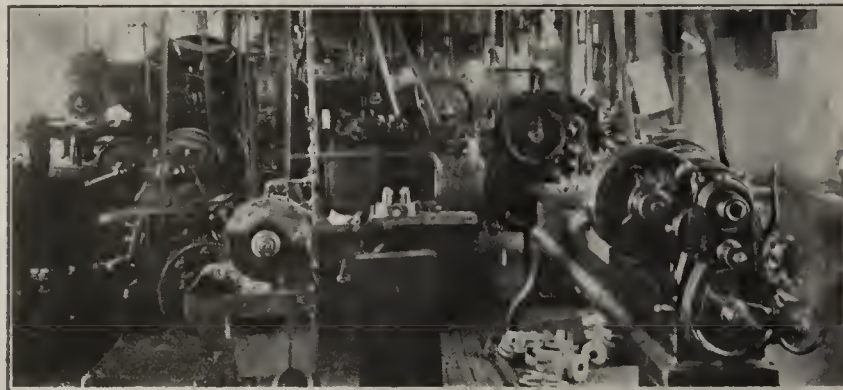
MAKING FREESE MACHINERY



Making Cutting Tables at the Freese Plant.



Pattern Makers at Work in the Freese Shops.



Up-to-date Machine Tools—Thousands of Dollars in Special Equipment.



Where They Make the Castings—E. M. Freese Shops.

this plant in the production of its high class products. At right angles to this main erecting floor is another machine shop, devoted largely to the manufacture of the Freese line of cutting tables and an erecting room.

The auger machines are made entirely in the main machine shop, and here is where most of the heavier machinery is handled. Connected with these two machine shops, on the same floor, is the office of the superintendent and another office for the shop foreman. An elevator and stairways from these two shops connect with the floors above.

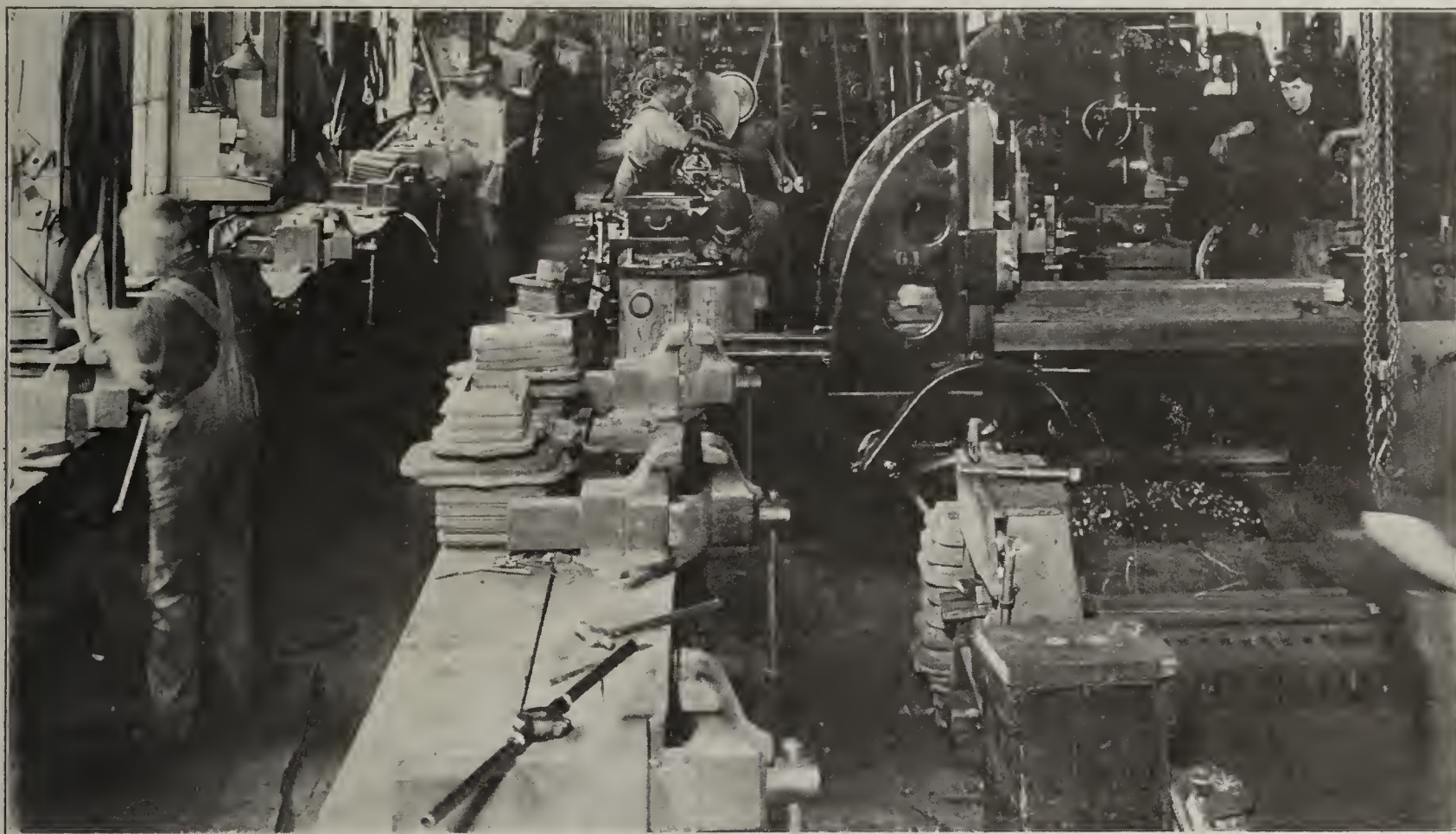
On the second floor are the pattern shops and carpenter shops, completely equipped for the needs of the plant. The third floor of the main building is used as a drafting room.

It is especially notable that throughout the Freese plant, the machinery equipment is up-to-date and that a remark-

The foundry, the interior of which is shown in the illustration, is a well constructed brick building 100x60 ft. in dimensions, containing a large cupola and is completely equipped for all kinds of light and heavy foundry work. It is possible to handle, at this foundry, castings as heavy as three tons in weight. The Freese Company gives particular attention to their foundry work and none but the best is produced.

Back of the foundry is a two-story brick structure, used as a pattern storage house, and here is carefully preserved all the valuable machinery patterns that form such an important asset to a manufacturing enterprise of this kind.

In a recent visit to the Freese plant, at Galion, it was noted that the shops were being worked to their utmost capacity and, in fact, for several months past, it has been necessary to work them several hours each night, overtime, to turn out the large number of orders with which



Where the Wheels of Industry Spin. Glimpse into the Main Machine Shop of the E. M. Freese Co.

able number of special machines are in use which have been invented and perfected for the sole purpose required in the manufacture of clayworking machinery and particularly of the Freese line.

Adjoining the main machine shop is the blacksmith shop for forge work and adjoining that is a completely equipped testing room for examination and testing of clays submitted to the company for expert reports. This testing room is equipped with a crusher, auger machine, cutters, Richardson repress and all the other necessary equipment for producing brick or tile samples, and we understand that this department has been very busy the past year.

The power house is attached to the main building and provides power for the entire plant. It includes a Chandler & Taylor engine and two boilers, one of the Houston, Stanwood & Gamble type and one of the Graves & Marshall make. The power plant also includes a compressor, furnished by the Chicago Pneumatic Tool Co. Pneumatic tools are used wherever possible about the plant.

Back of the main building has recently been erected a new stock storage house, 90 by 60 ft. in dimensions. This building will be used solely for the purpose of carrying large parts, stock supplies, etc.

the company has been favored.

On the main erecting floor can be seen a considerable number of the big Freese auger machines in process of construction, including the giant "model J."

The Freese Company have recently developed a line of single-g geared auger machines and pug mills which have already met with much popular favor in the trade. They are manufactured from the largest to the smallest capacity. The Freese line of counter-g geared machines, however, continues to be built as heretofore.

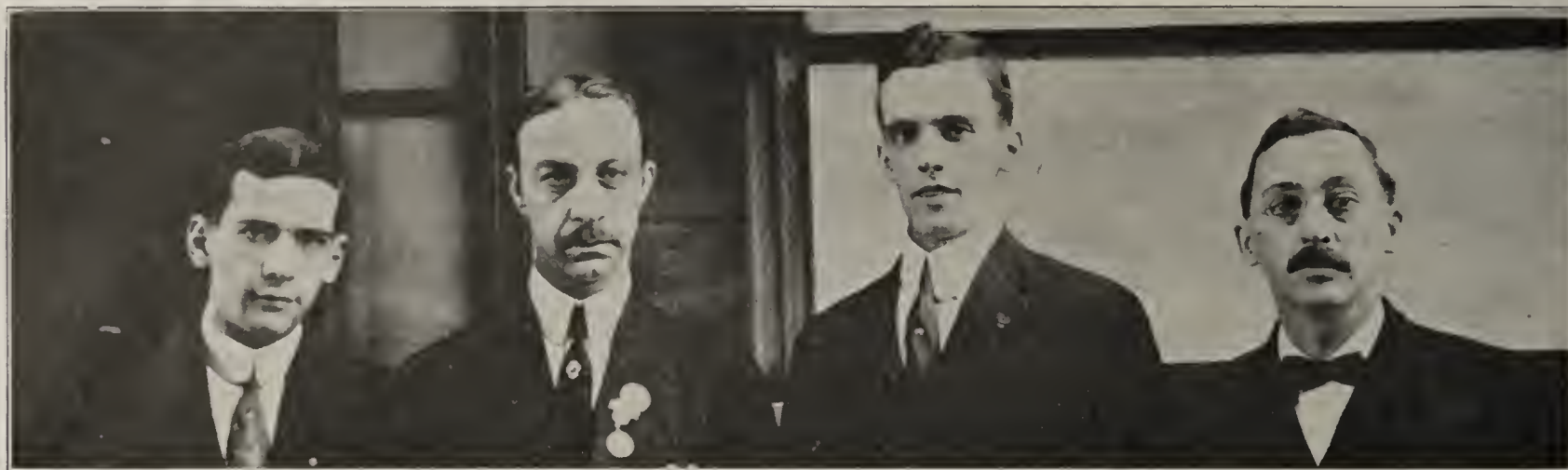
It would appear that it is only a question of time when the Freese plant will outgrow its present commodious quarters and require enlargement and it is to be noted that the company recently acquired a considerable addition to their acreage, and we understand that new buildings of increased capacity will soon be erected.

The Freese line of machinery is so well known as scarcely to need mention in an article of this kind. The company turns out complete equipments for manufacturing brick and tile by the stiff-mud process and has equipped a large number of important plants for the manufacturing of building brick, paving brick, fire brick, hollow block, fireproofing, drain tile, etc. The Freese

Company were the originators of what is known as the Union brick machine, the first of these being placed on the market in 1894. Through the use of this Union machine the use of a separate pug mill or clay mixer may be avoided. The Freese "J" Union machine, the largest which they make, has a capacity of from 60,000 to

OPPOSED TO CONCRETE CONSTRUCTION.

"I am somewhat opposed to reinforced concrete for foundry construction," says George K. Hooper, of the Hooper-Falkenau Engineering Co., New York, "on account of what I term 'manufacturing elasticity,' since it does not adapt itself very well to alterations and extensions which are constantly



Part of the Organization of the E. M. Freese Co. H. H. Freese, E. L. Hess, A. J. Freese, and B. E. Place. Photo Taken at the Louisville Convention.

120,000 brick per day and is nearly 26 ft. in length.

The Union machines are made by the Freese Company in a variety of sizes to meet various requirements.

The Freese Company take particular pride in their "Mammoth" style auger brick machine. This is a massive piece of machinery of well bound proportions and



Grinders at Work.

has a capacity of 40,000 to 80,000 brick per day and a total length of 16 ft. A similar machine known as the "Mammoth, Jr." is of smaller size.

The Freese Company manufacture a number of different styles of cutters and cutting tables, among them being their famous rotating automatic cutter, their regular rotating cutter, their board delivery cutters, special hollow wire cutters, etc. The Freese line includes various types of pug mills, disintegrators, elevators, piano wire screens, spiral clay feeders and other machinery and equipment required in clayworking plants.

With the continued growth and progress of clayworking, we can safely prophesy continued prosperity and growth for the E. M. Freese Co.

The United States Geological Survey reports the production of fire brick for 1909 as more than 50 per cent greater than the output for the preceding year and even higher than that of the record year of 1907. The output for 1909 was 55,150,000 pieces of fire brick, the equivalent of 838,167,000 nine inch fire brick.

being made in plants devoted to foundry work. Brick and hollow tile are the most adaptable, brick probably being more so than any of the others. Considering the present price of brick, no saving can be effected by the use of the other two forms of covering, although in large foundries the weight of the steel can be maintained, at the minimum, by the use of hollow tile above the windows.

"I have always presented plans of all my buildings to the reinforced concrete contractors, that they might compete with the other forms of construction, but I have not yet been able to secure a bid or to have a building built as cheaply by them as from other materials, and when I say this I accord due appreciation to the question of insurance, as locality and contents are considered by the underwriters as well as the type of the building.

"For interior partitions hollow tile make a firm, cheap wall. Concrete plaster on wire lath, expanded metal, or galvanized



Splendid Transportation Facilities. Train Load of Freese Machinery Ready to Leave the Plant.

netting usually requires so much supporting steel that it is quite expensive and practically costs more than tile and does not possess the advantages of the latter.

"Steel roof trusses should be carefully designed so that they may be conveniently reached with cleaning and paint brushes, especially in foundries of the continuous type, where considerable vapor arises from the cooling sand. The trusses and columns should be carefully and thoroughly painted."

The clay manufacturer who succeeds—puts thoughts into action.



Butler Building at Dallas, Texas. Half-a-million Brick, Furnished by the Malakoff Brick Co., of Fort Worth, Tex., Were Used in its Construction.

BIG BRICK ORDER.

The Malakoff Press Brick Co., at Fort Worth, Tex., are justly proud of the fact that they were able to furnish the brick for the Butler Bldg. at Dallas, Tex., which contains eleven acres of floor space and required approximately half a million brick for its construction, making the largest face brick order ever placed for one building in the state of Texas. The Malakoff Company competed against a number of large brick manufacturers outside of the state and secured the contract entirely upon

everything about them, even the rocks of the "everlasting hills," has crumbled to dust.

Brick is made in almost every conceivable color and shade, the permanence of which is unequaled by any other structural material. With the skillful use of these colors the builder adds to his design that living touch which the painter gives to his canvas.

WITHSTOOD THE CHICAGO FIRE.

On Market St., south of Van Buren St., Chicago, within a few blocks of the center of the city, is a deserted brick building, which withstood the Chicago fire. The building was built of half brick and half stone with an old fashioned square brick chimney. Its walls are seared with the breath of the great fire and its stones are as ruined



The Old Watson Mansion, Erected in 1819—First Brick House Built in St. Louis.

the quality and beauty of their brick. The colors vary from a reddish purple to dark browns and black, making a very handsome massive effect.

In a recent copy of the "Southern Architectural Review," an illustration of the Butler building appeared, which we are pleased to reproduce in our columns.

The Malakoff Company recently completed shipments of brick for the ten-story Skirvin hotel building at Oklahoma City, Okla.

Brick, because of its size and ease of handling, is adapted to every form of construction—large and small.

Brick is imperishable. The earliest records of man are found inscribed on tablets of burnt clay, while ev-



Brick Building in Chicago Which Withstood the Great Fire.

as though they had stood for centuries. The brick, which are of a crude character are, after all these years' exposure to weather, still in a comparatively good state of repair, the bonding being as usual the weakest part of the structure.



BRICK AND CLAY RECORD

VOL. XXXIX. SEPTEMBER 1, 1911 No. 5

WE ARE OPTIMISTS.

We believe in the future of this country, and also in the future of the clay industry.

We believe the general public is just beginning to realize the importance of building for the future, instead of planning only for the immediate present. The day of putting up large flimsy, showy frame houses, made hideous with over-ornamentation, has passed and the substantial, compact elegant brick home is fast becoming the sensible fashion of the day, among wealthy home builders.

We believe in the immediate future of our great clay industry. Municipalities are each year building more brick-paved streets and installing more extensive sewer systems and farmers are realizing that tile is just as useful in dry as wet years, also in the new plan of sub-irrigation, tile will play an important part.

This optimistic belief is based upon conditions which cause prosperity. The financial condition of the country is good. The banks are full of money, interest rates are low and there is confidence among those who have money to loan.

Crops, according to Government and weather reports, will be good. So with prosperity abroad in the land, what is to hinder the clay manufacturer from getting his share of "the plums?" He must do his part and be ready when they begin to fall. In fact he should be at work now, using the local papers to cry his wares, showing people the many ways in which brick can be used and why they are better than other materials, which are endeavoring to push brick from its rightful place—at the head.

In many quarters, there is evidence of a feeling of confidence that the autumn will bring additional building activity.

The large steel companies are operating at greater capacity than at any time before during the year. Some of them are turning out steel at the rate of 80 per cent of their capacity; less than two month's ago the percentage was barely 60 per cent. This means business for the fire brick manufacturers, as well as for face brickmakers.

We fully believe that this fall will see a steady improvement in business, which every clay manufacturer should be ready to take advantage of. Every manufacturer should be prepared to secure some of this business. Daily arguments should be put forth, personally and through local papers for the use of brick for farm buildings, silos, garden walls and walks as well as for home and business buildings.

If you haven't a market for your ware—make one. Educate every one in your community on the subject of fire losses through the use of frame buildings. Tell them of the saving in paint, fuel and repair bills, as well as in insurance rates, to be achieved by building brick buildings. They do not know these things. It is your duty as well as your business to preach brick to every man you meet, until he is acquainted with all the advantages of brick as an incomparable building material.

The trouble is you have been blaming the other fellow (the concrete man) for tending strictly to his business—that of selling his product, by any and every means. Now is the time of the great awakening, brick men are just beginning to get into their fighting clothes and are beginning where they should have begun many, many years ago—in the Publicity game. It is not too late to regain lost ground as the superior weapons are at your door. It is up to you to shoulder arms and help keep up the fight, until brick is universally acknowledged—King of building materials.

The public is being educated to quality in brick—educated to demand the best in clay products.

It is the habit of satisfying customers that counts in the race for success in selling brick.

The brickmaker who is busy at his own doesn't want the other fellow's job.

The clay man who argues with the inevitable gets the worst of it; the great evils in the industry can best be met through co-operation and friendly discussion.

MONEY IN AN OLD STOCKING.

You Laugh at the Foolish People who keep large Sums of Money tied up in old Stockings. But at almost any clay plant one sees Money in large Quantities tied up in some idle Machine, which has been discarded.

If you have such a Machine, why not sell it? Take advantage of the speediest Means to that End by using the columns of our Classified Ad Department. An Advertiser in our last issue wrote, saying: "I have had a surprisingly large number of Replies to my Advertisement and am well pleased with my Investment of \$1.00."

Why not send an Ad for our next Issue? To-day is none too soon to "set the ball a-rolling." Our Rates are \$2.00 per inch for space. The Returns are 100-fold.

A VALUABLE WORK.

The American School of Correspondence has just issued one of the best publications of the year. The book is in cyclopediac form and is part of that school's splendid correspondence course in building construction. This particular book deals with the history of fire, the fire waste, the theory and practice of fire-prevention and fireproof construction. It is written by Architect Fitzpatrick, of Washington, D. C., which means that it is both authoritative and interesting. It is illustrated with hundreds of splendid views of fires and fire's effects and seems to have been gotten up regardless of cost. Though intended primarily as an instruction book for the school's own students, it will be of very great value to every fire department, building department, architect, engineer and builder in the country and comprehends the very best data and matter the press can possibly find from which to excerpt editorials, etc., in the campaign it is carrying on in behalf of "Fire Prevention."

Not the least important feature of the book is the first appearance of the model Building Code upon which Mr. Fitzpatrick has so long been at work. It is the official Code of the Association of Building Commissioners and it is expected that before long it will be the one adopted by most if not all of our cities.

Probably no one man has had as much to do with the inception and revision of Building Codes as has had Mr. Fitzpatrick and this one is the summing up, the putting into one, of all that experience and skill have devised in the codes that have been written ere this. It calls for careful plans for every building by an experienced architect, and makes that architect sign a statement, in securing a permit, that the plans are in accordance with the Code and that he is responsible for the building. It divides the city into "inner fire limits," "outer fire limits" and "boundary limits." Within the inner limits all buildings must be fireproof, all public buildings anywhere have also to be fireproof, as also all buildings over four stories. In the outer limits all buildings must be fire-retarding in that the outer walls and roofs must be non-combustible. In the suburbs frame buildings may be erected, but even there nothing of frame over three stories is allowed and in these buildings adequate cut-offs and barriers have to be provided. All public and semi-public buildings, hotels, apartments, etc., have to be conspicuously labeled as to the class of construction they are, "fireproof," "ordinary," or "dangerous," and it is made a misdemeanor to advertise one's building as of a superior class to that it is labeled. The floor loads allowed are also to be conspicuously labeled on each floor. The height of buildings is limited to twice the width of the fronting street, with a maximum height of 200 feet. But the maximum height may be taken advantage of anywhere provided that at a height twice the width of the street the building be recessed back to a line 50 feet from the center of the street. Towers and domes may, under proper restrictions, be carried up above the 200 feet limit.

COMPANY REORGANIZES.

Reorganization of the Columbus & Hocking Coal & Iron Co. has been completed. When the property was recently offered at receiver's sale, it was bought for \$375,000 by a re-organization committee composed of F. N. B. Close, Frank B. Keech and Alexander Gilbert, of New York. All chattels, buildings, real estate and improvements have been taken over by the reorganized interests. These have been turned over to the Hocking Valley Products Co., a corporation recently perfected, and which has unusual bright prospects. There was only one bidder for the

property. The court required each bidder to qualify by the depositing of a certified check for \$10,000.

The new company has \$4,600,000 stock and \$2,000,000 5% first mortgage bonds which fall due in 1961. The re-organization plan calls for an assessment of \$10 per share on both preferred and common stock, for which new bonds of face value were exchanged. The preferred stock also received 100 per cent of the new stock for their holdings and the common stockholders were given 50 per cent in new stock. Bond holders received 75 per cent for their holdings in the new bonds and 50 per cent of their holdings in the stock of the new corporation. Practically all bond and stockholders in the old company participated in the reorganization plan, and as a result the new corporation starts in new life with an ample amount of working capital.

General offices of the new company will be maintained in Columbus, O., and the plant at Greendale, with a capacity of 100,000 brick per day, will be under the active management of Daniel Reagan, formerly interested in the coal and brick business at Terre Haute and Brazil, Ind.

ANCIENTS USED HOLLOW BLOCK.

A writer in the "Chicago News" makes the following comments on the use of hollow building tile:

"I will admit that stucco when applied upon wood or metal lath attached to wood studding makes a wall of small value as far as insulation is concerned. If people would build houses, the walls of which were composed of hollow tile, with stucco exterior, I am sure that they would have no cause to complain about the high temperature within the building in the summer or low temperature in the winter.

"Probably many are not acquainted with hollow tile, as it is considered by many a new building material. We do not know the exact date or period when this type of material was first used, but we have found hollow tile walls in buildings devoted to bath purposes in the buried cities around the Bay of Naples. The people at that time recognized the efficiency of dead air space as an insulator and therefore used hollow tile for walls of the 'hot rooms.'

"Stucco and like substances for coating exterior walls were used a great many years before the pyramids were ever thought of. The person who said that there is nothing new under the sun was no doubt correct. He probably repeated the statement made by somebody centuries before.

"There is no question, in my mind, that the stucco and hollow tile of this period are the best of their respective classes of material that have ever been produced."

UNITED STATES FIRE LOSS.

Discussion of the subject "Prevention and Elimination of Fire Hazards," by State Fire Marshal C. J. Doyle, Marshal Seyferlich, of the Chicago fire department, and Alderman Dunn at the weekly luncheon of the ways and means committee of the Chicago Association of Commerce recently held in the La Salle Hotel developed some facts and recommendations, among which are:

The fire loss of the United States for one year would build the Panama canal.

Chicago's fire loss for two years would build the deep waterway from the lakes to the gulf.

"There are many obstacles to contend with in a city like Chicago," said Marshal Seyferlich, "as there are so many frame buildings, in the business section as well as the outlying sections."

BUSIEST SUMMER EVER EXPERIENCED

Large Force of Workmen Evidence of Prosperous Condition at the J. D. Fate Shops at Plymouth, Ohio.

The past summer has been a record-breaker with the J. D. Fate Co., of Plymouth, Ohio. The orders booked during the month of August having surpassed all previous records for that month in past years. These sales were not confined to any particular locality, but were from all parts of the United States as well as from foreign lands.

That there is no stagnation at this establishment is evidenced by the accompanying illustration, which shows the employes of the J. D. Fate Co. during the so-called dull season this year. If further evidence of prosperity were needed, it would be indicated in the good-natured and well-nourished appearance of the smiling president of the company, H. H. Fate, and his little daughter, who have been playfully dubbed "the Fate Imperial and Fate Hummer."

Among the orders recently received by the Fate Company are the following: One special Premier machine for hollow-ware for The Johnston Brothers, of Clayworks, Ia.; an Imperial machine for The Goodwin Tile & Brick Co., of Des Moines, Ia.; an Imperial for C. Miller & Sons, of Clermont, Ia.; an Imperial with vertical attachment for tile up to 20 inches for Hoagland, Ind.; an Imperial machine with automatic table for larger sizes of tile for The Illinois Shale Tile Co., of Albion, Ill.; and an Imperial machine with automatic cutting tables and dies for The Salem Tile & Mercantile Co., of Salem, Oregon. They also have orders for a Hummer machine, with crusher, elevators, dies, etc., for F. M. Baker, of Defiance, Ohio; a "D" outfit for C. A. Nelson, at Beaver Dam, Ohio; a side-cut automatic brick table and two automatic tile tables for

S. C.; and a large, special No. 3 disintegrator for Johnston Brothers, of Clayworks, Iowa. Besides these are a number of orders for smaller disintegrators, crushers and regular automatic tile tables for all parts of the country, together with a specially built Premier machine for hollow-ware and conduits for The Clay Product Co., of

Brazil, Ind.; an order for an "A" machine, double shaft pug mill, two automatic cutting tables for Brazil, South America, and dry pan, elevators, screens, double shaft pug mill, Imperial machine, automatic brick table automatic tile table, tile dies, dump cars, winding drum and everything for a complete outfit in a new brick and tile plant for Wehinger Brothers at Mansfield, Ohio.

Aside from the orders already booked, the Fate Company have a number of good prospects in view, which they expect to close up before many days.

The Fate Company conduct at their plant a thorough testing department, where clays are tested free of charge. If desired, the ware will also be burned for a nominal sum, about two barrels of material being necessary for a thorough test. The Fate Company are ready and willing, at all times, to give clay manufacturers the benefit of their years of experience in the matter of the arrangement of plants and

machinery, so as to provide the greatest possible convenience and economy of labor and material.

FIRMS CONSOLIDATE.

At the annual meeting of the Black Hills Pressed Brick Co. and the Rapid City Lime & Gypsum Co., held in



The Fate Imperial and Fate Hummer.



Working Force of the J. D. Fate Co., at Plymouth, Ohio.

Belle Plaine, Iowa; special automatic table for The Ludowici-Celadon Co., of New Lexington, Ohio; special automatic cable for The Ohio Clay Co., of Cleveland, Ohio, for hollow-ware; a large automatic table for The Don Valley Brick Works, of Toronto, Ontario; a clay feeder and granulator for Marion,

Rapid City, S. D., the directors and stockholders agreed to consolidate the two companies, the stockholders in the lime company accepting stock in the brick company, which has daily output of 15,000 brick. W. A. Ewart, of Pierre, and Spearfish and Rapid City men are largely interested in the two enterprises.



RISK IN EMPLOYING BOYS.

A boy under 14 years of age, who operated a hoisting machine in a brick plant, had his right hand caught either in the friction pulley or between the brake and the bull wheel, mangling his hand so that it was of little use. This was in the state of Washington, where a statute makes it unlawful for any person to employ a male child under 14 years of age in any factory, without the written permission thereto of a judge of the superior court of the county wherein such child may live. In an action brought by his father, as guardian ad litem, or for the purposes of the suit, to recover damages, the complaint, in addition to the fact that the boy was under 14 years of age, alleged that the brick company neglected to warn him of the dangerous condition of the place, or to caution him as to such dangers, hazards, etc.

The brick company, for answer, denied the allegations of the complaint, and pleaded that the boy assumed the risk and was guilty of contributory negligence. It also pleaded that the boy was employed at the urgent request of his father, who represented to it that the boy was over the age of 16 years and competent and able to do the work; that it relied upon the representations made by the father and believed that the boy was, as he appeared to be, over the age of 16 years; that the boy was employed solely by reason of the representations made and the appearance of the boy, and not otherwise.

During the trial of the case, the company offered to show that it had used care to ascertain the age of the boy, and had exercised good faith in giving him employment; and requested the court to instruct the jury to the effect that, if it used care in order to determine the age of the boy, and had been informed by the boy's father that the boy was over 14 years of age, and that, if the age and appearance of the boy were such as to lead the company to believe, and that if from these considerations it did actually believe, that the boy was over the age of 14 years at the time of the employment, then it would not be guilty of a violation of the statute in employing the boy.

The trial court denied this request and instructed the jury, in substance, that, if they found that the boy was under the age of 14 years at the time of his employment or injury, and that he was employed to work in this mill or factory and was injured therein, the employment was unlawful; that the company assumed all the risk; that the defense of contributory negligence of the plaintiff was not available to the company; and that the representations made by the father as to the age of the boy were no defense to the action.

The jury returned a verdict in favor of the plaintiff, for \$8,500; and the Supreme Court of Washington affirms the judgment for the plaintiff, *Glucina vs. Brick Company*, 115 Pacific Reporter, 843. The supreme court says that it is of the opinion that the employer must know, at his peril, that the person employed is over the prohibited age. If the father were suing for loss of services of the child, his representation that the child was 16 years of age would preclude him from saying otherwise. But the fact that the father misled the brick company was no defense as against the child. Even if the appearance of the child indicated that he was over the age of 14 years, that fact

would not relieve the company, because the statute makes no such exception. It recites: "Every person who shall employ any male child under the age of fourteen years at any labor whatever, in or in connection with any store, shop or factory, shall be guilty of a misdemeanor." This court is satisfied, therefore, that the trial court did not err in sustaining the plaintiff's demurrer to the affirmative answer, or in giving the instructions which were given, or refusing the instructions mentioned above, which were requested by the company. Nor does the supreme court consider that the judgment was excessive.

BURNING QUESTIONS.

A subscriber in California writes asking the following questions:

1. How much time should be allowed for cooling a common red clay brick after the oil is shut off?
2. Can the fire be shut off at once as soon as the maximum temperature has been reached, or if not how should it be regulated?
3. Could a brick be cooled off in a few hours without injury?

We referred these questions to Mr. Anton Vogt, kiln expert, who answers them as follows:

1. It is my experience that such brick, (if not vitrified) can be safely cooled in about five days. About 48 hours after the oil is shut off the fire-doors can be opened about one-fourth and one-fourth more every 6 hours. It is a mistake to hold the kiln air-tight. Air must be supplied from below to replace the escaping heat on top, otherwise the heat in the kiln will draw cold air down from the top. I presume the inquirer has up-draft-kilns.

2. No the fire can not be shut off at this time, as then the contraction or shrinkage of the clay takes place, that is the kiln settles.

When sufficient settle has been reached then the fires can be shut off to regulate the fires, air must be admitted into the arches if they are getting too hot, and if this is not enough, the supply of oil must be reduced.

The object is to hold the settling heat and not increase it in the arches and get it to the top with air currents and held it there with tight platting until the proper settle is reached.

Yes, a bad brick can be cooled in a few hours, it can not be injured neither can a bad egg. We all know it takes days to heat up brick to get good results and they can not be cooled in a few hours without injury. Just pull out a few test brick during and at the finish of the burning and compare their ring with those that have been cooled shortly.

3. Some clays stand more rapid cooling than others. Each brickmaker must find out what his clay will stand and govern himself accordingly. No set rule can be given.

It is practically impossible to cool a kiln of brick in a few hours not even speaking of the injury. The kiln would have to be put in a fireproof refrigerator and then the ice would melt and steam and keep the brick hot a long time.

There is no agent known which would cool such a mass of heat in a few hours, unless it could be found at the north pole. Write to Peary or Dr. Cook for their opinion.

TOO MUCH CUTTING.

Owing to the predilection of Greek and Italian employees to use knives and revolvers to settle disputes among themselves, several manufacturers in Iowa have decided that cheapness is not the only factor to be considered in securing help.

MOTOR-DRIVEN PLANT.

Messrs. O. J. Masee, Jr., and L. S. Russell, vice-president and erecting engineer respectively of the Bibb Sewer Pipe Co., a new industry locating at Macon, Ga., have within the past month "swung around the circle" of Northern and Eastern manufacturers of clayworking machinery, and after a most critical examination of the very latest sewer pipe machinery, idle at factory and active in model sewer pipe plants, unhesitatingly placed their order with the Stevenson Co., of Wellsville, O., for a complete motor-driven equipment for a two-press plant. Part of this machinery has already gone forward, and with the energy those gentlemen display, a complete factory will be in operation in that city by early fall.

"BLUEING" BRICK.

It is rather an expensive method to use manganese for an addition to a clay in order to make blue brick, and especially when the clay is very low in iron contents. With a clay high in iron, an addition of from 3 to 5 per cent. of manganese will be sufficient, if the burning is done right. It must be burned with very little draft and reducing fire in order that the iron contents in the clay will be reduced from the ferric to the ferrous state, which will color the brick black in place of red, as usual. It is difficult to obtain these results in continuous kilns, but in down-draft and chamber kilns, in which paving and blue brick are burned, the matter of obtaining black brick is not a difficult problem. In order to burn black brick in continuous kilns it will be necessary to use the same method as tile manufacturers use for making blue and black tiles. The brick are put in saggars and coal dust is packed all around them. The saggars are made tight by putting clay between them, so that no air can come inside the sagger. With this method a black matt brick can be easily obtained. Another method is also to apply a black slip to the surface of the brick, and the clay of the brick does not need to be of a black color in that case.—Tonind. Zeitung.

OPERATES THREE PLANTS.

The Southern Clay Mfg. Co. with headquarters at Chattanooga, Tenn., operates three plants, located at Robbins, Tenn.; Chilhowie, Va., and Coaldale, Ala. The combined acreage of the three plants is approximately 1,200.

The buildings at the various plants are of brick and the shale used is procured by means of steam shovels.

Seven large dry pans are used to grind the shale and waste heat dryers are used at each plant. The combined kiln battery of the plants is composed of 38 down-draft kilns. Corliss engines compose the power equipment to run the three plants and 11 large boilers are required to furnish the steam.

Paving brick is manufactured exclusively at all three of the plants and finds a ready market among the southern cities, which are showing much municipal pride in recent years in the paving of many miles of their streets.

VALUABLE DISCOVERY.

A valuable clay deposit has been discovered in the Brazil, Ind., district, by coal operators. In order to reach a vein of high grade coal it was necessary to do about 18 feet of stripping, which is being done with an especially large steam shovel. The clay was tested and found to be of the finest quality for the manufacture of pavers, face brick, conduits, sewer pipe and terra cotta also. Further information on the matter may be obtained by referring to page 47, classified ad department.

MONEY IN SILO CONSTRUCTION.

An authority on farm building operations states that there are 600,000 silos on the farms of this country, most of which have been built within the last six years. The state agricultural colleges and the Department of Agriculture, at Washington, have done much to educate the farmer in economic methods and the silo as a money saver for the farmer has been given a great deal of publicity. Of all silos those of brick are the most satisfactory in the long run, and the country brick maker might do well to work up sentiment in his immediate locality along this line, thus securing a home market for his ware.

COST OF MAKING BRICK.

The figuring of cost in brick yards has not been practiced to any great extent, and while the figures which are obtainable vary greatly, it has been found that the best results are obtained over a long period of operations. The following table will give an idea of the operations of a large brick yard, well equipped, which made six million brick per year. In 1894 they had a strike and in 1909 the year was very bad for production on account of the weather condition. The power used was a steam engine of 80- h.p.:—

Production in Year	Mil- lions	La- bor	Kiln Coal	Engine Coal	Re- pairs	Ex- pense	Sup- plies	Total
1901.....	3,250	6.86	2.90	2.15	2.02	0.75	0.48	15.16
1902.....	2,225	7.96	3.20	1.62	1.88	1.39	0.15	15.40
1903.....	2,500	7.00	3.24	2.28	2.48	0.88	0.14	16.02
1904.....	3,000	7.04	2.87	1.40	3.47	1.28	0.20	16.26
1905.....	3,500	6.91	2.92	1.28	5.00	0.68	0.20	16.79
1906.....	4,150	7.00	2.95	1.40	0.89	0.70	0.18	13.12
1907.....	3,634	8.00	4.40	1.19	1.25	0.73	0.17	15.47
1908.....	4,300	7.30	3.12	1.50	0.60	0.78	0.10	13.40
1909.....	2,674	10.35	2.73	1.60	1.60	1.20	0.17	17.65
1910.....	3,809	8.15	2.49	1.44	1.57	0.75	0.21	14.61
Av.....	3,304	7.57	3.09	1.59	2.07	0.91	0.20	15.42

These figures are all based on the thousand brick, and the values represent marks (1 mark, 24.8 cents). Most bricklayers make the mistake that they do not count the depreciation of the plant, and also do not bear in mind the interests. It can be safely stated that a brick yard is run down in twenty-five years, and a depreciation of four per cent. is, therefore, not too much—Deut. Topf. & Z. Z. No. 31, 1911.

WANTS ROOFING TILE.

By addressing the Bureau of Manufacturers, Washington, D. C., and referring to the number noted, direct information may be obtained concerning the following: No. 6818. Spanish red clay roof tiles.—An American consular officer in Canada reports that a business firm in his district has expressed a desire to be placed in communication with manufacturers in the United States of Spanish red clay roofing tile.

COMPANY SUED FOR DAMAGES.

Tony Abruzzese has sued the Shackelford Brick Co., of Des Moines, Ia., for injuries sustained by a cave-in of clay which he claims the company did not have sufficiently protected.

OPERATE TWO PLANTS.

The Clark Manufacturing Co., manufacturers of brick and drain tile at Owensboro, Ky., operate two plants, one being located at Moseleyville, 10 miles south of Owensboro, the other at Ashyburg, Ky. Both these plants were equipped by the E. M. Freese & Co., of Galion, Ohio.

These two plants are owned and operated entirely by F. W. Clark and his three sons, S. L., Harry and Jos. F. Clark. The company is fortunate in being able to sell the entire year's output of both plants on the yard for local use.



CONDITIONS IN DRAIN TILE INDUSTRY.

It is generally conceded by tile men, throughout the country, that this is an "off-year" in the drain tile business and that the season has not been as prosperous as hoped for. This condition is the result of the drouth, which prevailed in those sections of the country where tile is most used. A number of leading men, prominently identified with the industry, have written us concerning these conditions, as follows:

Mr. F. E. Keeler, president of the Mason City (Ia) Brick & Tile Co., which operates four large plants at Mason City, and is one of the largest clay manufacturing concerns in the country, has to say the following in reference to the present conditions in the drain tile industry:

"The past season has been anything but prosperous in Iowa and Minnesota drain tile fields. At present half of the tile factories in these two states are either completely shut down or running on half time, with all the yards heavily overstocked and sales being made at reduced prices. With these conditions at present, I do not see how any of the factories expect to operate during the coming winter. From what I am able to learn the sales and shipments, so far this season have been less than 50 per cent of what they were for the same period last year. It is rather unfortunate that with these conditions, and the overproduction and shut down of factories, there are still under headway several stock promotion schemes for building more factories that will largely increase the production."

Mr. Leo Childs, president of the Northwestern Drain Tile Association of Ohio, who is connected with the Hancock Brick & Tile Co., of Findlay, O., writes us of the conditions in Ohio, as follows:

"Drain tile conditions in Northern and Western Ohio can be summed up as follows: We have found a very decided decrease in the use of small tile in the past eighteen months, but we have had a fair business on larger tile, that is, from 10 to 27-inch inclusive, but this demand has not been as great as in previous years.

"The climatic conditions were very much against the use of drain tile, last spring and summer, due to the fact that it was a very dry season, as there was not sufficient water to carry the levels in the ditch. The results were that a great many tile sold are still lying on the ground and have never been laid.

We find that wherever a locality is having many changes in the ownership of the land, the drain tile business is good, because the new-comer always investigates the drainage conditions first. We have had many thousand acres of land purchased in the last few years by Illinois farmers. But there have been very few farms which have changed hands in the past year and a half.

"We find that the market price of farm produce was below normal last fall, besides nearly all the farmers lost money on cattle. As a consequence, the farmers are more conservative in the expenditure of money at the present time than ever before in this locality. The Canadian Reciprocity agitation has also had some influence.

"We are meeting with a condition which has never before in the history of the drain tile business presented itself, namely, that many hundreds of acres have been completely tiled. In what is known as the corn belt of Ohio, we find hundreds of acres which have been drained every fifty feet, with nothing smaller than 4-inch tile. In conclusion I will say that in my opinion, the drain tile business, in Ohio, reached its zenith in the year 1909."

Mr. Malcolm P. Post, of Post Brothers, manufacturers of hard burned farm drain tile, with office and factory, at Commerce, Mo., writes us: "There has been practically no demand at all for drain tile, in this territory, since the first of May. The weather has been so dry that the ground became so hard no ditching could be done except with a machine, consequently our sales of tile for the last three months have been small. There are, however, several fine jobs just waiting for a good soaking rain to soften the ground and it is our opinion that there will be a fairly good demand for tile this fall and winter, though not nearly so good as it would have been had we had a wet spring, as the corn in this section has suffered materially from the drought and a good many farmers were figuring on spending the money they would realize from their corn on tile.

"We would be glad to hear the opinion of manufacturers in other sections."

Against Price Cutting.

Mr. E. H. Haeger, of the D. H. Haeger Estate, manufacturers of drain tile and clay products at Elgin, Ill., writes us as to drain tile prospects as follows: "We look forward to a very satisfactory business this fall. We have noticed a falling off of sales during the summer months, but are very glad to find that we have shipped just about as much tile as we did last season. We have endeavored to give our customers the very best grade of tile and in doing so we have been able to increase the net price of the tile over what we received last season.

"It is a regrettable fact that, owing to scarcity of business, some of the tile manufacturers have tried to make forced sales and have only succeeded in loading up their dealers so heavily, during the summer months, that their stocks will carry the dealers far along into the fall; consequently, when there should be an active demand for tile, the dealers will be selling from stock which they have purchased at very much reduced prices.

"The tendency of many manufacturers toward cutting of prices should cause them to stop and think, for they are losing out in the long run and the extra profit in many cases is going to the jobber, or middleman. We believe that there should be a fair profit for the manufacturer, and with fairly good crops this year the farmers should be in position to use considerable tile and be willing to pay fair prices for the best grade.

"As to the future outlook of the drain tile business, we are not in position to make any statement, other than what one may draw from the fact that Wisconsin and Illinois, according to surveys, are said to have about three million acres of land which can be reclaimed by tile drainage. It would seem that if this field were properly worked there should be a brisk demand for tile."

BOOSTING CLAY TILE.

The newly organized Western Tile Drainage Bureau has already accomplished good work in behalf of clay drain tile, although it has been in the field only since last winter. Mr. C. B. Platt, the secretary, whose address is Van Meter, Ia., has given much time and effort to the success of the Bureau and already has plans under way which insure its success, providing that the tile manufacturers are desirous of promoting their own interests to the best advantage.

A recent piece of literature put out by the Bureau is a circular telling particularly of the plans of the Bureau for promoting the sale of tile among the farmers of Iowa and the Middle West. The first page of the circular shows a suggestive illustration with the heading "Let us Help One Another Sell Tile," and following is in part the proposition placed before the tile manufacturers:

Advertising—with a capital "A"—is the keynote of our campaign. We are going to advertise extensively yet our plan is such that the cost of inquiries will be kept so low any dealer can afford to join this bureau and take advantage of the new business that will be created for him.

Through advertisements in the leading farm papers we're going to reach those farmers who do not understand the advantages of tiling, or who think that tiling is needed only in wet seasons. Through these ads and through the book which we send every prospect who inquires, we educate the farmer to the point where he is ready to buy tile. Then you can step in and make the sale.

This advertising in the farm papers is absolutely impartial. No manufacturer is mentioned in the book sent to inquirers. Every manufacturer gets an equal chance to sell the prospects developed by this advertising. All share the advertising expense making the cost to each small, and all get an equal benefit.

Dealer members only get the names of those who answer the advertisements asking for the Free Book. Each dealer member receives the names of those who answer the advertisements from his territory. A reasonable number of books will be mailed to lists of land owners furnished by dealers and additional copies will be furnished them for distribution from their offices, at cost.

This is the first time a definite effort has ever been made to educate the farmer in the use of tile. That it will be profitable goes without saying when you consider the vast amount of land that is yet untiled.

Big Advertising Campaign.

The best farm papers in every territory we enter will be used to carry the propaganda of the Western Drainage Bureau.

Large space will be used. Our ads will dominate the page on which they are used and the farmer cannot help seeing our offer to send him a book on tiling free. Here is the list of papers which have been selected so far. Others will be added as the Bureau grows: Iowa Homestead, 110,000; Wallaces' Farmer, 60,000; St. Paul Farmer, 140,000.

These papers reach a vast number of progressive farmers of the Northwest. They reach just the class of farmers who will be attracted by our offer to send them free a book which gives them full directions for draining their land with clay tile.

Wherever it is practical these ads are signed with the name of the paper in which they appear and the farmer is asked to write to the paper for the book. The farmer has much confidence in his farm paper and this will enable us to get the honest facts about tiling profit before him in a manner that cannot fail to convince him. It will be as though the editor of his favorite paper wrote him a special letter on tiling.

Free Editorial Notice in Farm Papers.

The editorial space of standard farm papers, the space where in the papers voice their official opinions, the space you couldn't buy for any money, is at our disposal. You get the advantage of this choice publicity if you join the Western Tile Drainage Bureau and help in this broad campaign of education.

Every farm paper that has any standing whatever believes in the tiling of farms. We have prepared articles on this subject which will be carried in the regular reading columns of the papers in which we advertise, thus forming another strong link in the campaign of education which we are conducting for the benefit of all manufacturers who affiliate with this bureau.

The work of the Western Tile Drainage Bureau deserves the heartiest support of every tile manufacturer in the Middle West and its contemplated plans should be of vast benefit to those interests.

Messrs. Matthews and Budlong have traded their tile plant at Traer, Ia., to A. Carpenter and others for 960 acres of land in Canada. Mr. Matthews will manage the plant until the close of the season.

DRAIN TILE NOTES.

It is reported that the Dows (Ia.) Brick & Tile Works is selling its tile at the rate of about eight cars per day.

Springfield, Ill., is to have a new drain tile industry. The Springfield Drain Tile Co., with a capital stock of \$30,000, has been incorporated by James A. Long and Charles G. McIntosh, of Portland, Ind., and John F. Miller, of Springfield. A six-kiln plant will be erected on twenty-five acres of land purchased east of the city. Fifty men will be employed at the start in making tile, but later brick will be added to the output. The site chosen is on the lines of the Wabash railroad and the Illinois Traction system belt line. Messrs. Long and McIntosh will not remove their factory from Portland, but will operate both industries.

A force of men is busy rehabilitating what was formerly the plant of the Red Wing Union Stoneware Co. at Marshalltown, Ia. New machinery is being installed; old buildings and machinery are being remodeled and it is expected that by October 1st the plant will be in readiness for the manufacture of sewer pipe and tile. Mr. Gary will be the resident manager and a new superintendent will be put in charge of the plant.

REPORT OF IOWA CLAY EXPERT.

G. G. Wheat, of Emmetsburg, Iowa, has made a report on the clay available at the plant of the new Fairmont Drain Tile & Brick Co., at Fairmont, Minn. Mr. Wheat finds that the clay cannot be used profitably for making brick and tile, as the cost of washing it to remove the limestone ingredients would be too much. He also reported upon other clay beds adjacent to Fairmont, and found the clay to be quite suitable. If the beds were of sufficient quantity, they would afford a proper material which could be shipped to the plant for use in brick and tile-making, at a cost which would allow a profit. The committee of the company will retain Mr. Wheat for further investigations.

MORGAN ENGINEERING CO.

The Morgan Engineering Co., of Memphis, Tennessee, has been organized by Arthur E. Morgan and L. L. Hidinger, for the practice of hydraulic and drainage engineering, with special reference to the reclamation of swamp lands.

Mr. Morgan leaves the position of Supervising Engineer of the United States Drainage Investigations and has associated with him a staff of engineers who have specialized in hydraulic and drainage engineering; and of consulting engineers, experts in water power development, water supply and sewerage, who will co-operate with the firm in their particular fields. The company is located in the Goodwin Institute Bldg., Memphis, Tenn.

TILE NEEDED IN TEXAS.

In a recent communication from G. W. Songer, proprietor of the Brazos Brick & Drain Tile Co. of Rosenberg, Texas, he states, that tile drainage is just beginning to be introduced in that state. He states:

"We have been making brick and tile the past six years in the gulf coast country. Our trade has been mostly in brick but the demand for tile is steadily on the increase. We are now working on some fair sized orders for tile that are to be laid in and around Houston, Texas. There is need of many millions of tile in this country. Our general business is good."

NO REGRETS.

"Most farmers lament the money they've spent
For things only made to beguile;
But never as yet did a farmer regret
The money expended for tile."



TEAMSTERS PREFER BRICK.

The following from "Municipal Engineering" is a decided boost for brick, as the approval of teamsters who use the streets constantly under all weather conditions bears weight and their opinion is well worthy of consideration.

"One of the most important results of the visit of Newburgh, N. Y., councilmen to up-river cities as the guests of the Merchants' Association is the removal of doubt as to the adaptability of brick for repaving Water and Colden streets. Some question had been raised whether brick would give horses sufficient 'footing' in hauling heavy loads up grade, particularly that at Clinton square, and one or two wholesalers entertained such doubt as caused them to express to the council a wish for the retention of the cobbles.

"Newburgh's representatives found that in Kingston steeper grades than that at Clinton square are paved with 'hillside' brick, which is satisfactory in all respects.

"Teamsters were questioned and without exception told the Newburghers they preferred the brick to noisy, dirty, rough cobblestone. Brick presenting a comparatively smooth surface, they can make better time, there is less strain on horses and wear on vehicles, and larger loads can be hauled. Slippery conditions are so rare as to hardly merit mention. During and immediately following incessant rains there is necessity for caution in negotiating a grade paved with brick, but traffic is not inconvenienced to any considerable extent and the pavement quickly dries off.

"A marked improvement in trade is reported by merchants in streets where brick has supplanted cobble, which was more or less shunned by automobiles and light vehicles, the modern pavement appealing to all classes of drivers and permitting an unobstructed and natural flow of traffic through the business arteries of the city. The Merchants' Association is a unit for a modern pavement in Colden and Water streets, and Kingston's experience with brick disposes of the only objection that has been or could be raised against the use of that material."

THE DETROIT CONTROVERSY.

An invitation was extended to Mr. Will P. Blair, secretary of the National Paving Brick Manufacturing Association, various experts in testing paving brick and manufacturers interested to go to Detroit, Mich., to assist in deciding the brick controversy, which has been going on there for several months.

A number of paving brick manufacturers have had their brick held up on technicalities for several months, the mayor refusing to allow the bills to go through. Among the firms affected is that of the Alliance (O.) Clay & Fire Brick Co., manufacturers of the Speedway block, which has \$17,000 worth of brick tied up by the mayor's action.

The city of Detroit has purchased, this year, through its commissioner, brick as follows:

Bessemer, 2,265,000; Massillon, 95,000; Townsend, 382,000; Speedway, 940,000; Novelty, 714,000; Wooster, 600,000;

Champion, 795,000; Nelsonville, 1,278,000; Medal, 1,200,000; Wassall, 708,000. Bessemer, the brick purchased in the largest quantity, has made the best showing in the tests so far.

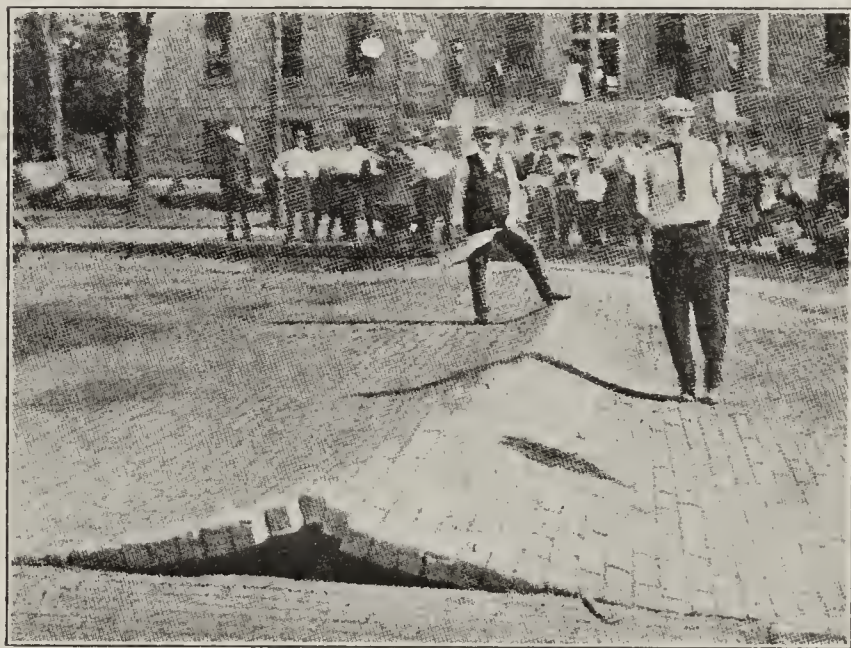
WILL USE BRICK.

Vitrified paving brick will figure in the improvement of various streets at Lorain, Ohio.

The city of Rome, Ga., will use brick in paving several streets.

INSUFFICIENT EXPANSION JOINTS.

Weather so hot that it warped the pavement was one of the summer visitations at Valparaiso, Indiana. The pavement in question was laid a short time ago, the basis of it being vitrified brick over which was placed a layer of cement that filled all the space between the brick.



Intense Heat Caused Paving to Bulge on Account of Insufficient Expansion Joints.

During the extreme heat of mid-summer, the people living along the thoroughfare were surprised to see a ridge or hump rise directly across the thoroughfare. The heat is supposed to have caused the cement to expand, and, as no provision had been made for this expansion, the surface gave way.—Popular Mechanics.

BIG FIRE AT PAVING PLANT.

Lack of hydrants in the vicinity of the plant No. 2 of the Los Angeles (Cal.) Pressed Brick Co., near Santa Monica, resulted in its almost complete destruction recently by fire, entailing a loss of \$20,000. The fire is thought to have resulted from an overheated drier. Besides wrecking the machinery, the fire ruined about 15,000 finished paving brick. The plant was one of the largest in the state, with a capacity of 100,000 pavers per day. Several buildings were saved, including the boiler and engine houses and the office. The loss was only partially covered by insurance and sixty men will be thrown out of work.

VICTORY FOR BRICK.

Our Kansas City correspondent writes us that the Pittsburg Vitri-fied Paving Brick Co., of Kansas City, had the pleasure, a couple of weeks ago, of landing an order for 1,500,000 brick, to be used in resurfacing a street there, that had been paved by the bitulithic people about four or five years ago. The old paving had been worn out, in spite of the fact that the paving taxes had not been over half paid. This left the property owners in the position of paving for something that was already worn out, and they must continue these payments for about five years yet, while paying for their good brick pavement. It is these little experiences which make good friends for brick as a paving material by those who have gone through the paving mill.

He also states that the concrete pavement on Sixth street, between Bluff street and Broadway, Kansas City, has recently cracked in several places, and friends of brick paving are pointing to the cracks, prophesying that they will soon spread and ruin the pavement. The city engineer calls attention to the fact, however, that this paving was laid in cold weather and did not have an opportunity to show what it could do.

PREJUDICED, TO SAY THE LEAST.

A few days ago there reached the desk of the "American Clay Magazine" two clippings from the editorial columns of the Marshalltown, Iowa "Republican," and the Council Bluffs, Iowa "Republican." These cities are half way across the state of Iowa from each other, and yet on the same day these two papers, hundreds of miles apart, published identically the same leading editorial condemning brick streets and favoring concrete. This appears a most astounding instance of the transmigration of thought. The nature of the editorial, which is full of technical information regarding the proper mixture of concrete, points suspiciously to the concrete source from which it sprung. For the benefit of the two newspapers we want to say that brick streets are worth twice as much as concrete streets, and the newspapers are wasting the people's money when they help to put over a concrete deal, as they seem to be doing. One statement in the article only need be referred to in order to show how unreliable and misleading the whole article is. The statement is made as follows:

"If anyone tears up a cement street, it can be relaid by any sidewalk mason and restored to perfect condition."

Anyone at all conversant with concrete knows that it cannot be successfully patched. Any school boy can tell this from his own observations. Such "rot" should show the public the unsound nature of the whole article. Brick paving will stand the test with any material and that it is superior and is giving the entire field of paving material a hard fight, is proven by the frequent attacks which are being made against the world's best and cheapest paving material. Utterances such as these appear to be about as worthy of respect and trust as is the hired assassin who lays in wait for his victim under cover of the thicket. It is a great pity that newspapers, credited with championing the people's cause, should lend themselves to prejudiced interests in this way, as it weakens the trust of the people in all papers, though thousands of them would not stoop to such practice.

PAVERS.

The fame of Streator, Ill., paving brick is reaching out to all parts of the country. The Streator Paving Brick

Co. received orders for several carloads of brick to be shipped to Winnipeg, Manitoba, and Toronto, Canada. This invades a new territory and is the farthest north that this company has made shipment. Mississippi is the farthest point to the south to which the Streator product has been shipped.

The contract for paving at Coldwater, Mich., was recently awarded to the Deckman Duty Brick Co., of Cleveland at 82 cents per square yard. Other bidders were: Wassal 83c, Bessemer 84c, and Metropolitan 84c.

A paving brick contract, at Holyoke, Mass., was awarded to the Shawmut (Pa.) Paving Brick Co., for 6,100 square yards at \$1.865 per square yard.

The Atchison (Kan.) Paving Brick Co. has been awarded a contract for the grading, curbing and paving of Kearney street, from Seventh to Twelfth, at Atchison, with two courses of approved vitrified brick, at its bid of \$22,931.95.

GILDING THE LILY.

From an exchange, we learn that the board of public works of Kansas City is considering a proposition to resurface Broadway, between Eleventh and Twelfth streets, with asphalt to be laid on the present brick paving. The street was paved with brick a number of years ago, and it is said that some local engineers hold that by heating the worn brick as the asphalt is placed, a first-class street can be made at small expense.

This, to us, savors too much of "gilding the lily and painting the rose," and while it may be one way to make use of a worn pavement, the chances are, that after the veneer of asphalt is worn off, the brick will still be good for several year's wear.

DUNN SYSTEM INSTALLED.

We have learned that the Dunn Wire-Cut Lug system of cutting paving block has recently been installed in the following plants: The Corry Brick & Tile Co., Corry, Pa.; Sterling Brick Co., Olean, N. Y.; United Brick Co., Greensburg, Pa.; Kushequa Brick Co., Kushequa, Pa.; Reynoldsville Brick & Tile Co., Reynoldsville, Pa.; Danville Brick Co., Danville, Ill., and Patterson Clay Products Co., Clearfield, Pa.

PLENTY OF ORDERS.

It is announced by officers of the concern that sales of paving block made by the Alliance (O.) Brick Co. for the paving of streets in Alliance, East Palestine, Crestline and Forest, with those for face brick in Alliance, Chicago, Cleveland, Detroit and elsewhere, are sufficient to keep the plant in steady operation for the balance of the present year.

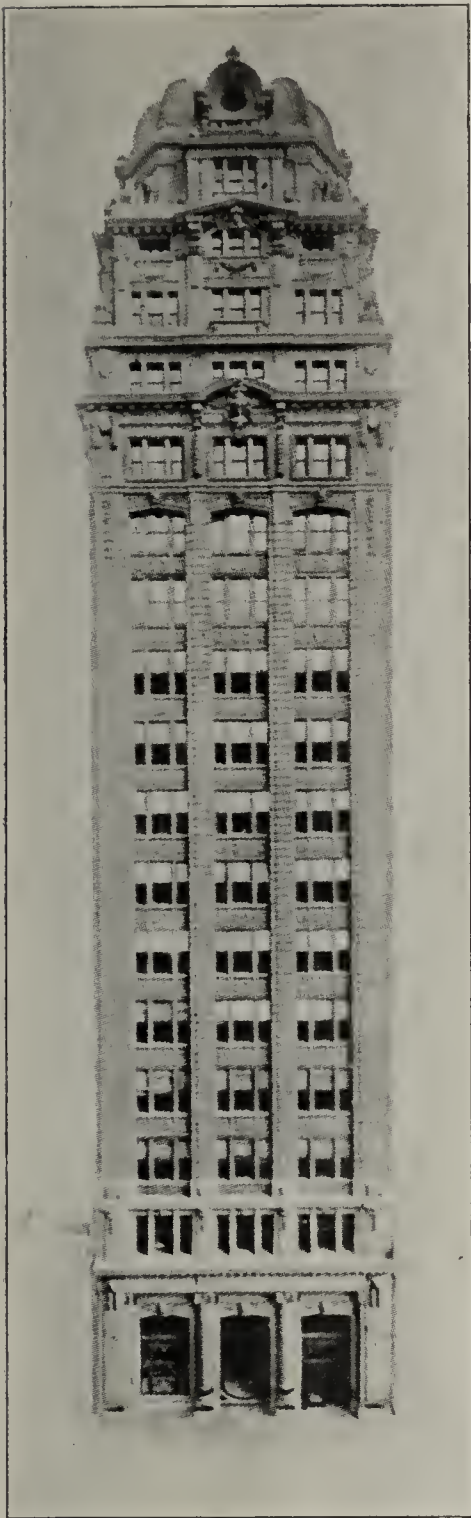
MAKING IMPROVEMENTS.

The Capital City Vitrified Brick & Paving Co., of Topeka, Kan., have secured the contract for brick to be used in local paving, and are making improvements to their plant which will enable them to make a better brick than heretofore. They have purchased machinery from the Bonnot Co., Canton, Ohio.

PITTSBURG PAVING CONTRACT.

Announcement is made that the Clearfield (Pa.) Brick & Clay Working Co. has been awarded a large contract for furnishing the paving brick to be used in South Fork street improvements at Pittsburg, at \$18 per thousand. Other legislation for increased street paving is pending at Pittsburg.

TERRA COTTA AND FIREPROOFING



FACED WITH TERRA COTTA.

The building shown in the accompanying illustration is the fifteen-story Humboldt Bank building, one of the modern fireproof buildings in the "New San Francisco."

This building, which is generally believed to be built entirely of sandstone, is in fact, faced with terra cotta from the third-story window-sill course to the top of the dome.

This terra cotta is the product of the Steiger Pottery Works, whose offices are in the Mills building, San Francisco, and works at South San Francisco and San Mateo, Cal., and is a clever imitation of sandstone calculated to deceive the closest observer. It is said that few of the Pacific Coast architects have discovered that the material is not stone.

The contract for the terra cotta used in the building amounted to \$45,000 and this was the first architectural terra cotta contract let after the fire.

It is reported that building is very active on the coast. One of the largest local brick and terra cotta buildings for which contracts have recently been let being the 10-story structure of the San Francisco Investment Co. at Sutter and Montgomery streets, San Francisco.

According to the plans for the new Oakland city hall, all the ornamental work is to be of terra cotta. The lower part of the building will be principally of granite, but wherever any decorative effects occur, terra cotta will be inserted.

TERRA COTTA INSTEAD OF STONE.

The new library building which is being erected at Bloomington, Ill., is being faced with terra cotta instead of stone as at first planned. All work on the foundation and ornamental balustrades will also be done with terra cotta.

FIREPROOF OF SCHOOL BUILDINGS.

There is a movement by school authorities in cities all over the country to give the children better protection from fire. The precautionary measures now taken are largely the result of the horror at Collinwood, O., a suburb of Cleveland, where twenty children lost their lives a year or so ago in a firetrap building.

The town of Port Jervis, New York, is the latest to fall in line. It has just appropriated \$80,000 for three school buildings of unburnable terra cotta. All the walls are of hollow block, which were subjected to a heat of 2,000° F., in the process of manufacture, and the fiercest fire will have no effect upon them.

Experts employed by the school boards of New York, Philadelphia and other large cities have conducted tests of various materials, with a view toward making the schools absolutely safe. These cities are putting up schools in which the combination of steel and hollow terra cotta removes the possibility of fire.

The whole country gets the benefit of the work of these experts, and thus is spread the gospel of safe schools. Now and then there is a costly object lesson, when the destruction of one of the old-style fire traps brings with it the death of young children; and such experiences spur city authorities to enforce better building methods.

FIREPROOFING IN CHICAGO CITY HALL.

Instead of fireproofing the columns of steel work in the Chicago City Hall with wire lath and plaster, these columns were fireproofed with two inches of porous hollow terra cotta, built two inches away from the extreme projection of steel work, each course being wired with copper wire. The intervening space between the tile and steel is filled with concrete grouting. All pipes were set outside of the fireproof covering, thus making it impossible for them to damage the fireproofing. These pipes are again protected against fire by another covering of tile.

The floor construction consists of six-inch hollow segmental side construction tile arches, spanning the distance of about 10 feet from beam to beam. The bottom flanges of the beam are protected with two-inch hollow soffit tile. Below this fireproofing construction an additional fire protection is offered in the shape of a suspended ceiling of incombustible material. In the corridors the space intervening between the tile arches and the ceiling is used as space for pipes. By introducing the segmental tile arch, the dead weight of the floor construction has been cut down to the minimum.

CHICAGO SHOULD BE EDUCATED.

Chicago is a fertile field to be worked in the brick publicity campaign, as is evidenced by the following figures:

Among the cities of the United States, Chicago stands at the head in the number and cost of concrete buildings. Figures gathered by the United States Geological Survey show that in 1909 there were put up in Chicago 519 buildings at a cost of \$9,849,800, or 32.31 per cent of the cost of all concrete buildings erected in the country. Seattle, Wash., ranked second in expenditures for this type of construction.



OHIO SEWER PIPE NEWS.

The latest information from Ohio, is that sewer pipe trade there is not quite up to normal, although there is a fair amount of new business coming in. The manufacturers watch the improvement bond issue market very closely, with the result that there is always a crowd of manufacturers after specifications to put bids in on each job.

Announcement is made that the Dennison (O.) Sewer Pipe Co., has increased its capital stock from \$75,000 to \$100,000.

Workmen who went on strike at the Canal Dover plant of the American Sewer Pipe Co. have returned to their places. These workers belong to a union, and the reason assigned for their quitting was due to a misunderstanding.

According to an unconfirmed report, another sewer pipe plant is to be built near Toronto, O., overlooking the Ohio River. It is said that Stratton Bros. have had ground staked off for a new sewer pipe plant near Port Homer, and that construction will be begun, at an early date. The head offices of the Stratton Sewer Pipe Co. are at Empire, O.

COAST BUSINESS GOOD.

Our California correspondent writes that the contracts let for sewer work in the annexed district of Oakland were: district No. 2, to the Contra Costa Construction Co., \$76,648; district No. 3, to C. D. Vincent, \$100,267, and district No. 4, to C. D. Vincent, \$108,730. The contract for district No. 1, amounting to about \$80,000, is to be let in a few days. This is said to be the largest single sewer project of the year in that vicinity, and will require about 150 miles of vitrified pipe, in addition to the 5-inch pipe required for house connections, which must be installed by the property owners under the sanitary laws. The pipe business will be pretty well distributed among the larger manufacturers, such as Gladding, McBean & Co., N. Clark & Sons, the Steiger Terra Cotta & Pottery Works and the Carnegie Brick & Pottery Co. All these firms are getting quite a lot of business in country towns, as well as San Francisco and Oakland, and on the whole the sewer pipe business on the Coast is even better than at this time last year.

Reports from San Francisco are that shipments of sewer pipe to points in the interior of the state are steadily increasing, and at the same time quite a lot of work is coming out in San Francisco and Bay towns. The largest of the recent jobs in San Francisco being a section of the North Point sewer, to be built by the Healy-Tibbitts Construction Co. Our informant states that arrangements are being made for the manufacture of sewer pipe for the new Oakland districts and that deliveries will soon be under way.

MORE AND STILL MORE ON PRICES.

The "mysterious stranger" of Philadelphia wishes to congratulate the president of one of the independent concerns manufacturing sewer pipe in Ohio, for coming out flat-footed with his article on the sewer pipe situation, in which he stated that the manufacturers themselves do not live up to the discounts they make. He also tells us, in support of this

statement, that it is a well known fact that the manufacturers when holding meetings for the advancement of prices, are at the same time notifying their large customers of what is being done at the meetings and advising them to wire the orders for their requirements in sewer pipe and flue lining to the factories at once, before the advance in price is announced.

Our friend also wishes to know whose fault it is that the prices are not higher. There is only one answer to this question, the manufacturers. They and they alone are responsible for the condition of the sewer pipe market today. They could change the whole situation at one meeting, and the solution to the situation lies in the few words of our friend, as follows, "It has taught me that there are more men connected with the sewer pipe business, who have absolutely no regard for their word, than can be found in any other line of manufacturing."

Here is a large industry with a large amount of capital invested in the various factories, the majority of which are located along the Ohio river, with the best of railroad facilities at hand, and the stockholders in these factories find that their investments are non-paying. Like our friend, what we would like to see, is the business put on a paying basis by selling at fair discounts, which are to be adhered to by all, the stabbing of each other being stopped, so that every one concerned in the business would receive a fair profit.

Let us sight an instance for you, as follows: One of the western manufacturers, who was on his way home from a meeting in New York City, stopped over in a certain large city to call on a customer of his. After a few moments of conversation they settled down to business, the manufacturer remarking that he wanted to be favored with an order, and as an inducement, without any hesitation on his part whatever, he quoted him a price of 10 per cent better than any other discount he had from any of his competitors. The customers called his bluff by ordering ten carloads to be shipped at once. He was then shown the discount at which the customer was buying at that time, the manufacturer remarking that he would stick by his quotation, but a few days after, the customer received a letter from the factory stating that after due consideration they had come to the conclusion that it would be impossible for them to fill the order at the figure quoted. This seems to be the way the western manufacturers have of doing business, which appears to us to be a mighty poor one.

We heartily endorse the remarks of our friend, in which he states that during the busiest part of the year one manufacturer will cut prices, simply because his competitors are cutting prices, which is the case each year. Here is where the mistake is made, as prices should be held up with exceptions to no one. Even at this time, the jobbers in this section of the country are selling small lots of this product at better prices than those called for in Schedule No. 7, adopted March 23rd, 1911, which only goes to show that these jobbers placed their orders in advance.

It is to be hoped that the manufacturers will take the matter up this coming fall and adopt some measure that will put the sewer pipe and flue lining manufacturing business on a better paying basis. Let all concerned get together and do something toward this end.

POTTERY NEWS

LESSELL ART POTTERY.

For compactness, there is no art pottery in the United States that can surpass the new plant of the Lessell Art Pottery, at Parkersburg, W. Va., which has just been placed in operation.

All the machinery in this pottery was bought from Zanesville, O., manufacturers, and while it is not extensive, nothing has been omitted necessary to give the concern an output of generous character for a one-kiln plant.

John Lessell, who is in charge, is well known as an art pottery decorator. He was for many years in charge of the decorating department of the Brunt pottery in East Liverpool, O., and was later associated with potteries elsewhere. The lines of ware which are to be made at this pottery differ greatly from those of other potteries, in that the finished

position, and the kilns have been topped out. This plant will have a capacity of five glost and four bisque kilns, and there will also be a battery of eight decorating kilns. Materials are being received, and the first samples of the ware to be made are now being shown the trade. The active management of this plant will be under the direction of Fred Sebring, for many years in charge of the Limoges China Co., at Sebring, O.

The S. Robbins Pottery Co., which was located at Winnsboro, Tex., has been removed to Greenville, Tex., because of better railroad facilities. Native clay is used to manufacture all the lines at this plant.

William Polk, of East Liverpool, has installed a mammoth brushing and dipping machine in the plant of the Smith-McNicol pottery at Wellsville, O., which will do the



Lessell Art Pottery Works, at Parkersburg, W. Va.

product will be done in metallic finish, such as brass, bronze and copper, to resemble metal ware.

The shape of the pieces will also resemble the metallic lines, this being brought out by the evident lapping of one edge over the other, the "rivets" being also distinctly shown. It is the intention of the company to manufacture ceramic art standards for portables and electroliers also.

Native clay is used almost entirely for the product of this plant. It burns red, and is so fired that it is vitreous. A remarkable test was given a large vase at the plant recently. After it was decorated it was filled with ice water and placed over a flaming gas fire, where it remained until the water boiled. The piece was then taken and cast into a tub of ice water. It came out without a crack or craze.

Skilled operators were secured from the art pottery district of Zanesville, O., while other help is local.

GENERAL NEWS OF THE CRAFT.

Every effort is being made to place the plant of the new Saxon China Co., at Sebring, O., in operation some time in September, and it appears as though Fred Sebring, who formed the company, will be successful in his undertaking. A considerable amount of the machinery has been placed in

work of a dozen or more people. The machine is the first of the character to be installed in a pottery in the Western district, and it is generally believed that, in time, the invention will be placed in all general ware plants.

Opening a pottery with a banquet, the first event of the kind on record in the United States, occurred at Evansville, Ind., when the new sanitary pottery of the Peerless Selling Co. was ready for operation. The new force of employes was given a picnic during the day, of which a barbecue was a feature. Then the big warehouse was handsomely decorated with flowers and a ball was given in the evening. Numbered among the guests at this dance were the best people in Evansville.

The continual increase of the capacity of the Homewood Pottery at Mannington, W. Va., from only a few to eleven kilns, shows that West Virginia is fast forging to the front in the production of sanitary ware. This plant has been operated steadily since it was established a number of years ago, and a feature has been made of all sanitary specialties. The improvement in the sanitary pieces has played havoc with the sale of the old-time toilet sets, which are made by the general ware pottery manufacturers, and the use of sanitary pottery is increasing annually.



SEATTLE SAND LIME PLANT.

The Northwest Brick & Lime Co., 436-7 Globe building, Seattle, Wash., is well along with the reconstruction of its plant on Whidby island, which was destroyed by fire about a year ago, says the "Pacific Builder and Engineer." Work has progressed to the extent that operations will be begun within 50 or 60 days. All the out-buildings are completed and are of a permanent nature. The boiler and engine house are being constructed of brick manufactured by the company. The other buildings are of mill construction. The company has a direct sewer route into the Sound and has its own water connections.

The capacity of the plant is being doubled, which will mean 40,000 face brick for every 24-hour run. Many shapes and colors of brick will be made, the wishes of customers being kept in mind. All requirements as to price and quality will be met.

In reconstructing the plant, all the latest improvements in machinery have been taken into account, and every feature will be strictly up to date.

The company has an unlimited supply of raw material. One of the finest sand banks in the United States supplies a sharp, clean, clear silica sand. This sand in its natural condition is of about the proper consistency for brick-making purposes. The source of lime supply is a half section of land in Snohomish county, near Granite Falls. The holdings at the plant aggregate 73 acres of land, with 1,500 feet of water front. It is estimated that the supply of raw material from the two sources mentioned will run the plant for a period of fifty years. Contracts have also been closed for the purchase of large quantities of limestone in the San Juan islands.

The market for the product includes Oregon, Washington and British Columbia. So great are the demands of this territory that it is not likely the company will undertake to extend its field of operations in the near future.

The officers of the company are: A. E. Whetstone, president and general manager; G. S. Hastings, secretary, and A. G. Keene treasurer.

SAND LIME NOTES.

The Hummelstown Brownstone Co., Hummelstown, Pa., report 1911 sales so far equal to whole of 1910 sales, which was their largest year, and orders still ahead and coming. They have sheds to pile 5,000,000 brick and run continuously throughout the year, giving them stock to fill orders promptly. Plenty of good shed room is an important item at the up-to-date sand lime plant.

In 1900, 26 sand-lime brick manufacturers met in Berlin, and organized The Union of Sand-Lime Brick Manufacturers, and their last convention was held in Berlin on February 24th, 1911. They are a responsible organization, and only manufacturers whose material is up to their official standard can become members.

The Atlas Brick Co., of El Paso, Tex., installed a wet-pan, and say that the output of the plant since the change is second to none, and the wet-pan has eliminated serious trouble that they had before.

There are now reported to be 280 sand lime plants in

Germany. In 1902, there were only 80 plants there making these brick.

The Philadelphia Sand-Lime Brick Co. has started a new plant near Haddonfield, N. J. This plant is a combination of the Sand-Lime Brick Co., formerly at Taney and Pine Sts., Philadelphia, and the Camden Granite Brick Co., of Haddonfield, N. J.

It is reported that the Vitrified Brick Co., of Canton, Ohio, are contemplating putting in a plant at Ontonagon, Mich., to make sand lime brick as there is said to be a fine deposit of sand there.

We are informed that the Jackson (Mich.) Pressed Brick Co. incorporated for \$100,000 has sold its holdings to the Saginaw Sandbrick Co. of Saginaw. It is understood that the name will be changed to the Jackson Brick Co. the plant will be overhauled, new machinery added and the capacity doubled and that the product will be very much improved. This company has plants at Kalamazoo, Sag-



Kentucky Wesleyan College at Winchester. The 600,000 Sand-Lime Brick Used in its Construction Were Furnished by the Winchester Granite Brick Co.

inaw, Battle Creek, Grand Rapids, Michigan City, Akron, Ohio, and a new plant is being erected at Lansing. All the product of this factory is used in Michigan.

FATHER OF SAND LIME PRODUCT.

The "Sand Lime Bulletin" for July states that Dr. Wilhelm Michaelis, known as the "father of the sand lime industry," died recently at the ripe age of seventy. By his many experiments he demonstrated that quartz with lime and water, pressed hard and placed under a high steam pressure, would produce sandstone of best quality.

After a recent fire at Hamilton, Mont., the city council ordered all the buildings which are to be rebuilt to be constructed of brick, and that all buildings in the business district must hereafter be built of fireproof material. This is an evidence of enterprise and progress.

NEW REVOLVING SHOVEL.

The Marion Steam Shovel Co., of Marion, O., has recently perfected a new type of revolving steam shovel especially adapted to the stripping of over-burden of all kinds. This machine successfully meets a long-felt want and a wide-spread demand in many fields. These shovels are exceedingly powerful, carefully designed to successfully withstand the severe shocks and strains incident to the strenuous conditions under which they must operate. They are equipped with extra long booms for stripping wide cuts and dumping the excavated material at a sufficient height and distance to permit the mining of the uncovered material without a part of this being under the spoil bank. By a single operation these shovels take the over-burden from the bank on one side and deposit it far enough over on the other to eliminate the extra expense of rehandling necessary by other methods, where the excavated material is first loaded into carts, cars, or skips—as the case may be—and hauled away by horses, engines, or cableways. But one crew is required for the complete operation, that for the shovel itself.

When opening up a new field, these shovels are capable of digging a thorough-cut and depositing the excavated over-burden all on one side within the limits of their reach. After the thorough-cut is well started, the uncovered material can be removed, so that when the shovel



New Marion Revolving Steam Shovel.

completes the one cut it can return on another, this time depositing the over-burden in the open pit or excavated space where the coal, for instance, has been taken out. This will permit a wider cut to be made the second time, on account of there being more room, and as the machine revolves in a complete circle the only necessity, in working back and forth against the face of the over-burden, is to shift the track for it to work on when returning.

Another superior feature of these special shovels over the ordinary type of excavator is that they will handle over-burden of a far greater depth and width of face. They are simple in design and easily controlled. Their entire upkeep and operating expense is surprisingly small, which makes it possible now to handle at a splendid profit many stripping propositions hitherto considered unworthy of development.

One of these special revolving shovels is being constructed for the Silver Island Clay Co., of Silverwood, Indiana, due for delivery this month.

ONLY ONE IN STATE.

The Oklahoma Granite Brick Co., at Oklahoma city is said to be the only plant in the state, which produces sand lime brick. While the plant has been in operation only a few months, the brick are being used in a number of buildings and have become quite popular.

UP TO DATE TRADE LITERATURE.

The third paper of a series of Ceramic Publicity Leaflets, issued by the engineering department of Tate, Jones & Co., of Pittsburg, deals with the application of oil burning appliances to different kilns and contains some useful information in regard to kiln construction, both up and down draft with drawings, illustrating the same. Some interesting statistics on expansion of air by heat are also included in this interesting pamphlet, which will be mailed to any one upon request.

BOOSTING DRY PRESSED BRICK.

The Fernholtz Brick Machinery Co., of St. Louis, scoffs at the idea of any other type taking the place of the dry pressed brick. While they acknowledge that recent varieties in rough-faced wire-cut brick offer new possibilities in brick wall facing and that such brick are especially appropriate for some purposes, yet they contend that the best wall facing for factory, office and store buildings and for city residences must always be the dry pressed brick, which because of its method of manufacture and its inherent character, must always be perfect in its beauty and in its appropriateness for such purposes.

They contend that rough-faced wire-cut brick has been used in some cases for purposes for which it was not suitable, and that architects and builders are coming to realize that every kind of brick has its place and that nothing can supplant dry pressed brick for its particular uses.

The Fernholtz Company are, therefore, enthusiastic as to the future of the dry pressed brick and believe the demand for same will increase. They are not afraid to express their opinions in this matter and are now starting a series of advertising announcements, in which the merits of pressed brick are set forth in an attractive manner. The first of these ads, under the title "The Day of Pressed Brick," appears in this number.

BROWNING'S BROWN BOOK.

A very handsome publication of a new catalog has been issued by the Browning Engineering Co., of Cleveland, O., describing their locomotive cranes and other products.

This firm manufactures the famous Browning steam shovel which has been doing such good work in many of the clay pits throughout the country.

WELLINGTON BUSINESS BOOMING.

It is pleasing to note that the business of the Wellington Machine Co. of Wellington, O., is in the most prosperous condition and that the company has received a number of nice orders recently, proving the popularity of this line of machinery.

Among the recent orders received for Wellington machines or outfits are the following:

Quaker Machine with equipment to W. G. Jacobs, Circleville, O.; Quaker Machine and complete equipment to Chris. N. Elling, Brush, Col.; Combination Outfit, Quaker Pug-mill and equipment to Northern Brick Co., Prince Albert, Sask., Can.; Combination Outfit to Watt & Mitchell, Princeton, Ind.; Big No. 6 Monarch with molds to Sloan Co., Paris, France.; No. 5 Monarch with equipment to W. A. Dodds, Hickman, Ky.; Big No. 6 Monarch to Mohawk Valley Brick & Supply Co., Utica, N. Y.; Duke Machine with sander and equipment to McLain Fire Brick Works, Irondale, O.; Quaker Machine and complete equipment to Kniffin & Riddle, San Luis Obispo, Cal.; Quaker Machine to Ed. G. Mattern, Allentown, Pa., and a Quaker Machine and equipment to F. M. Wirthman, Delaware, O.

STRIKING EXAMPLE OF PROGRESS.

It is always interesting and encouraging at times like these, when business men generally refer to trade as "picking up," to find concerns that show that things have picked up, and furthermore that they have never let down.

One of this country's most striking examples of this is the Main Belting Co., manufacturers of the Leviathan Belting, who have their factories in Philadelphia and branch warehouses and offices all over the United States and in Canada. Within the last year when some of our other friends have been inclined to get their vision through blue glasses, this company has been doing a tremendous business; in fact, have added establishments in Montreal and Seattle to their already long string.

Again, they have just finished the construction and equipment of a new factory, built for the exclusive purpose of manufacturing their new conveyor belting, termed by them "Leviathan Special-Black Conveyor Belt." The company claims this belt's every fibre is impregnated and coated with their new black preparation, and the cover, or carrying side of the belt, has a coating of elastic material about an eighth of an inch thick that protects the fabric from the wear which must necessarily come on a belt when it is not protected by a coating. As one of their up-to-date representatives puts it, "It looks good on the face of it."

In visiting the factory of this tremendous growing and going concern, it is astonishing to note the hundreds upon hundreds of great rolls of belts that are in storage awaiting seasoning, belts that range in widths from 1 to 38 in., and in thickness from 4 to 10-ply. An extraordinary demand makes it possible for this concern to carry belts in this great range of sizes in stock subject to immediate shipment. Ten years ago few companies would have had the temerity to have carried such a jumbo size as 38 in. 10-ply in stock ready to be shipped on the minute and this is only another evidence of the prosperity and enterprise of this company as well as evidence of the general progressiveness of the age.

AMERICAN EQUIPMENT.

The Cleveland, Okla., "Enterprise" recently printed an excellent description of the fine plant of the Cleveland Vitrified Brick Co., which plant was illustrated in our issue of August 1st.

Among the pleasing comments made by the "Enterprise" were the following:

"This plant which is recognized as a model of excellence, is equipped throughout with machinery and appliances made by the American Clay Machinery Company, of Bucyrus, Ohio. While the success of the company can be attributed to the management, that management gives due credit to the machinery equipment which has ably assisted in the work. Proper equipment is the foundation of success upon which good management builds a prosperous business. The Cleveland company has been a pronounced success. What more can be said?"

ANOTHER CONCRETE SMASH.

Buffalo's new public pumping station, which cost about \$380,000 to build without any equipment, collapsed recently, burying fourteen workmen under an enormous mass of debris. Five men were instantly killed and a number of others were seriously injured. The reason assigned for the collapse of the building was the failure of the reinforced concrete body of the roof.

As the building had not been accepted by the city, the loss will fall upon the contractors.

HIGH GRADE IN EVERYTHING.

The Chisholm, Boyd & White Co. have long been known in the trade for the perfection of the dry presses which they manufacture. It has been the policy of this company to use nothing but the highest grade material and to turn out nothing but the highest grade of finished product. This policy seems to be followed also in the advertising matter issued by the company, as is exemplified by the illustrated catalog just issued by the Chisholm, Boyd & White Co. This catalog is a handsome booklet of 26 pages, enclosed in an attractive cover and printed on fine paper in the very best of the printer's style. It is handsomely illustrated with large half-tone engravings showing various types of Boyd presses, including the 6-Mold Boyd Special, 4-Mold Boyd Special, 4-Mold Standard, 2-Mold Special, Boyd Dry Pan and Acme Clay Mixer.

The book also contains elaborate blue prints, showing plans for laying out a complete brick plant, locating the various equipment and machinery required. It also contains much reading matter of interest and should be of particular value to those connected with the dry press branch of the brick business.

NEW STRING TO HIS BOW.

Our old friend, John J. Moroney, of the Chicago Brick Machinery Co., has other strings to his bow besides his Elwood dry press brick machine. He is president and general manager of the U. S. Rocking Grate Bar Co., 20 W. Jackson Blvd., Chicago, and is selling through that company the U. S. Rocking Grate and Chicago Steam Blower. These devices, he says, are invaluable for the convenient and economical burning, under steam boilers, of all kinds of cheap low grade fuel with high grade results.

If you are not satisfied with the efficiency of your boiler or the size of your coal bill, better tell Moroney all about it.

UP-TO-DATE METHODS.

The Martinsburg brick wagon, made by the Auburn Wagon Co., of Martinsburg, W. Va., is built for both manufacturers of and dealers in brick, for the purpose of local delivery. Among recent sales made was one to the Union Brick Co., Shamokin, Pa., who decided that this wagon was the best on the market for delivery.

The special merit of the Martinsburg wagon is the ease and speed with which the brick are loaded and unloaded. It is truly claimed for the wagon that "it loads in 10 minutes and unloads in 1 minute and never chips a brick."

LARGE CAR ORDER.

The Union Mining Co. recently placed an order with the Chase Foundry & Mfg. Co., of Columbus, Ohio, for one hundred and twenty-five dryer cars of a special design to handle the products of their Mt. Savage, Md., plant.

DRY PRESS SALES IMPROVING.

We are informed by the Anderson Foundry & Machine Works that business in their line has been improving lately and is now quite encouraging. They will ship this month three Berg presses, one to the Sibley-Menge Press Brick Co., Warrior, Ala., one to the Zoar Fire Clay Co., Zoar, O., and the third to the Hamilton Pressed Brick Co., Hamilton, Ont. They are also figuring on two other dry press plants at the present time.



Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers— Market Fluctuations and Industrial Prospects

SPARKS FROM THE WIRE.

The Allegheny Valley Brick Co., manufacturers of face, paving and building brick and vitrified shale block, with offices at Tarentum, and works at Valley Camp, Pa., are rebuilding their plant, which was entirely destroyed by fire, July 27th. About two months' time will be required to reconstruct and equip the machinery and power buildings. The loss was partly covered by insurance.

The North Dakota Pressed Brick Co. is a new company at Dickinson, N. D., organized with a capital stock of \$50,000 by W. L. Richards, L. A. Simpson of Dickinson, and Alfred L. Martin, of Sentinel Butte, N. D.

The Plasteron Dry Wall Block & Terra Cotta Co. has been incorporated at Burlington, N. Y., for the manufacture of terra cotta, hollow building block, brick and other clay products. The company is capitalized at \$125,000. The incorporators are G. C. Gunn, L. S. Gunn, of Burlington, and N. Morton, of Florence.

After three months' work, the immense 197-foot chimney containing 500,000 brick has been completed at the plant of the Boston Mfg. Co., Waltham, Mass.

Two of fourteen kilns being erected for the Freeport (Pa.) Clay Products Co. have been completed. Each will have a capacity of 90,000.

The Pennsylvania Clay Co., at Fallston, Pa., has completed extensive improvements at its plant and is now operating at full capacity. This company has plants at Fallston and at Crows Run, which have a combined capacity of 80,000 paving brick daily.

The Niles Brick Co., of Martinez, Cal., is negotiating for a large tract of land near the station of Glen Frazier near Martinez, on which it is understood the company contemplates the location of an immense terra cotta plant.

Mr. Geo. H. Hiss, the oldest brick maker in South Baltimore, Md., died recently at the age of 78 years.

A factory will be erected at San Diego, Cal., for the manufacture of brick and pipe. The factory will cover four city blocks and will be operated by C. E. Anthony and J. H. Parsons. The company has purchased forty acres of shale land near the city.

The Hinde Brick & Tile Co., which operates a large plant at Sandusky, Ohio, have offered to erect a permanent brick office building at the Erie County fair grounds. This would be an ornament to the grounds and would be a standing advertisement for the company's product.

The Kankakee, (Ill.) Tile & Brick Co. are beginning to take clay from Bakers' Hill, which property was purchased a year ago. Switches have been built from the clay beds to the factory. The clay will be procured by means of a steam shovel.

Articles of incorporation have been filed at San Francisco by the Standard Sewer Pipe & Terra Cotta Co. The capital stock is \$1,000,000, with \$500 subscribed. The directors are E. C. Leffingwell, W. F. Barnes, H. C. Norton, Wm. Sea, Jr., and Jas. A. Bloch.

A Pennsylvania newspaper states that C. H. Metcalfe, representing the Perfection Brick & Tile Co., of Boston, has purchased for a consideration of \$50,000 the Rice farm in Greene county, Pa., for the purpose of erecting a brick and tile plant thereon. The Perfection Company is capitalized at \$500,000.

The Commonwealth Clay Co., of Streator, Ill., has been incorporated with a capital stock of \$1,000. The incorporators are Albert Warren, Wayne P. Hendricks and Ambrose D. Dennis.

The Clay Products Co., of Jersey City, N. J., has been incorporated to manufacture clay products and fireproofing materials, with a capital stock of \$2,000,000. The incor-

porators are: T. F. Gregg and N. H. Raymond, of New York City, and F. P. McDermott, of Jersey City, N. J.

The large brick works at Dillsburg, Pa., which was built several years ago, at a cost of over \$100,000, was sold last week by J. W. Wetzel, representing the stockholders, to John B. Hosfeld for \$5,400. It is understood that Mr. Hosfeld will re-organize the works and place it on a solid basis.

A charter has been issued to the Pittsburg Silica Sand & Brick Co., at Beaver, Pa. The capital stock is \$5,000, and the incorporators are Alfred R. Graham, Pittsburg; J. T. Anderson, Beaver, and W. G. Crooks, of New Kensington.

Under the title of the Illinois Drain Tile Co., a company has been organized at Albion, Ill., with a capital of \$20,000 for the manufacture of brick and tile, by J. G. Carlyle, Geo. C. Zeigler and Sam A. Zeigler.

The Butler Brick & Tile Co. are furnishing the brick for the new Butler building at Butler, Ind. About 150,000 brick and 8,000 hollow block will be required to complete the building.

The Youngsville Brick & Tile Co. has been incorporated at Bradford, Pa., with a capital of \$60,000.

The Farmers and Merchants Co-operative Brick & Tile Co., incorporated in South Dakota, with an authorized capital stock of \$300,000, has secured an option on the Finkle Brick Co.'s plant of Marshalltown, Iowa, which the company will re-organize for the manufacture of drain and building tile as well as brick.

The Castle Rock Brick & Tile Co. has been organized by Mr. Casey, Neal Allen and Chas. L. Kirk, with a capital of \$25,000, at Castle Rock, Colo.

Louisville, Ky., August 26.—With the glad tidings of a \$6,500,000 building year being noised about the city, about \$2,000,000 of which is still to be completed, it is little wonder that the brick manufacturing interests are delighted and predict confidently that the year of 1911 will go down in the records as the best business year in local circles, since the advent of strongly competitive building materials in this territory.

During the past month the brick men have been up and doing every minute of the time, for the Building Inspector's office over at the City Hall, the architectural headquarters of the city and the contractors have had their hands full of plans, together with building permits and other evidences of a big fall season in embryo. Besides the amount of business that has been booked, constituting probably the finest feature of the situation, there has been much doing in the way of July and early August deliveries, out-of-town work being much more plentiful than it has been at this season for some years.

Every brick plant in the city is running full capacity, and in spite of the fact that deliveries are being pushed as rapidly as possible to clean up the "market," the general report indicates that several of the plants have booked sales of their product for several months ahead, well into fall.

With a general run of fine building business prevalent, there are naturally special features of work now in progress and prospect which demand extra attention. Plans for sky-scraping office buildings are numerous. The Inter-Southern Life Insurance Co. is to erect what will be the largest and tallest structure in Louisville, an 18-story office building at the corner of Fifth Ave. and Jefferson St., while the Falls City Construction Co. is handling work upon a ten-story structure of law offices directly

across from the Court House at Center and Jefferson streets. John P. and Isaac Starks, well-known capitalists, have completed a handsome four-story building for general business on Fourth Ave., near Broadway, and are having plans drawn for a sky-scraper on what is conceded to be one of the most valuable sites in the downtown district at Fourth Ave. and Walnut St.

Hotel construction has also been unusually extensive. The Tyler, at Third and Jefferson, has been completed, a big brick structure costing about a quarter of a million dollars, in which Owen and Isaac Tyler, well-known Louisville brick men, are heavily interested. The foundation for "The Watterson," an eleven-story hostelry, named after the illustrious editor of The Courier-Journal of this city, is now being laid, offering opportunity for brick work on a job which will total about \$800,000 for the whole hostelry. Plans are now being prepared by Capt. Brinton Davis, a Louisville architect, for a 10-story apartment house on Third Ave., and similar structures are in embryo in nearly every one of the residential sections of the city. The Louisville Herald, a morning daily, is to have a new home requiring half a million brick on Walnut St., and the Courier-Journal is to move its headquarters to what is now a big warehouse on Third and Green Sts., which will be remodeled throughout and furnished with a brick firewall in the rear.

The Hydraulic Brick Co., one of the biggest Louisville manufactories, has been operating extensively in the Kentucky field during the past month, landing some big contracts out in the state. The prospect along this line is very alluring, for crop conditions throughout the "Blue-grass" are of the best and a bumper amount of building will develop as the fall harvest period comes and goes. Because of the cool weather, during the latter part of July, it is probable that summer warmth will continue throughout September and consequently structural operations can be pushed to the limit.

The Hydraulic concern is now working on a 500,000 common hard brick contract with the Eminence Distilling Co. for whisky warehouses at Eminence, Ky., and is also furnishing a lot of hard to the Kentucky Distilleries & Warehouse Co., at Athertonville, Ky. In addition to these jobs, the Hydraulic is shipping on a 200,000 hard and salmon contract for warehouses at La Grange, Ky., and a 430,000 order of similar quality for the Masonic lodge building and school in that city. Brick for the Lincoln School Building, at Lincoln Station, Ky., is also being furnished by the local firm to the amount of about 1,500,000 face and hard.

Superintendent Joseph Cicotte, of the central yard of the Hydraulic Brick Co. in this city, has worked out a proportionate mixture for the manufacture of face brick which is conceded to be hard to beat, as it is enabling the Louisville company to compete very successfully in handling face business in cities such as Lexington, Versailles and Paris, Ky., where there are extensive local plants turning out a good grade of outside wall stock. Mr. Cicotte, utilizing a big screw mixer, combines 30 per cent shale with 70 per cent red clay and obtains a grade of mud which, when burned, results in some of the finest face brick seen in this territory for some time. The dirt is unloaded direct from H. B. Co. cars on the yard switch into the clay shed by means of a Jeffrey conveyor system, utilizing a No. 6 bucket, thereby obtaining a fine mix with a minimum amount of handling and expense.

Donald McDonald, Jr., of the Hydraulic Brick Co., departed for a vacation trip through the lake region of Michigan during the early part of August.

"Business is improving steadily but there are no unusual developments and everything promises to be in statu quo for the remainder of the summer," said J. H. Bell, of the Louisville Fire Brick Works at Highland Park, a suburb of this city.

Secretary D. M. Crane, of the East End Brick Co. on Spring St., says that his company has all the business it can possibly attend to, with the yard output contracted for up to November 1. Trade is so active that some extensive improvements are being figured on, said Mr. Crane. Among the substantial contracts secured during the past couple of weeks are: 300,000 brick for the addition to Sts. Mary and Elizabeth Hospital at Twelfth St. and Magnolia Ave.; 250,000 for an addition to the Broadway Baptist Church; 200,000 for a public school

house at Payne St. and Goss Ave.; 600,000 for a big apartment house in the Highlands residence district, and 500,000 for the new home of the Louisville Herald on Walnut St. near Third Ave.

Oscar Hillenbrand, of the East End Brick Co., is planning a vacation trip to Atlantic City, N. J., to take place the middle part of this month.

The Southern Brick & Tile Co., on Magnolia Ave., is doing more business than could be expected at this time of the year, according to Ernest McHugh. One of the bumper contracts which was awarded to this company during the past month was that for the brick work on the Watterson hotel, an eleven-story structure now in course of erection. The Southern Brick & Tile plant was recently augmented by the construction of a new office building.

T. Bishop, of the Southern Brick & Tile Co., left for a business trip through Henderson and other Western Kentucky towns a few days ago.

The Louisville Brick Co., on Rudd Ave., is reported to be running its plant full time with an abundance of orders and prospective contracts. President Joseph Nevin says that the selling and delivery season this fall will probably be prolonged because of the late summer.

"Business is unusually good," said Owen Tyler, the well-known brick man in the Tyler Building. "As the field increases in scope and importance we are taking on new lines of stock and are now in a position to handle the biggest demand that the booming building year can produce."

"The Louisville vitrified paving field is considerably affected by cut-price operations at present," said Mr. Bannon, of the Kentucky Vitrified Brick Co., "as some of the manufacturers seem over anxious for city bids, etc., and are willing to drop to the level of doing business for the fun of it. However, the Kentucky concern is maintaining the market level as strongly as it can."

It is reported in Louisville clay-working circles that a brick and tile factory is to be established in the near future near Franklin, Ky., as geologists have discovered a valuable deposit of clay suitable for such products near the little Kentucky town.

The Lexington Brick Co. is making considerable improvements to take care of onrushing fall business and has moved its offices from Walton Ave., in Lexington, Ky., to the new yard on the Liberty pike, a short distance from that city. A big hydraulic press is being installed by the Lexington Company and within 60 days enough supplementary equipment will have been installed to enable the enlarged plant to turn out every known grade of face brick. In announcing its removal through the newspapers, the Lexington brick makers evidenced the right spirit by saying, "Visitors always welcome. If it's business we will send for you."

The Owensboro Sand Lime & Brick Co., at Owensboro, Ky., filed a petition in bankruptcy a short time ago, having been doing business in Owensboro since 1905, when it was incorporated with a capitalization of \$50,000. The plant of the company was destroyed by fire several months ago and was never rebuilt, although the concern carried on its sand and lime trade as usual. J. W. McCullough, who owned a big majority of shares in the Owensboro Co., then decided to quit business and the consent of other shareholders followed, the concern being gradually forced into liquidation. The firm name has been purchased by C. L. Field, of Owensboro, who intends to continue business at the plant.

T. L. Herbert & Sons, at Nashville, Tenn., have been doing booming business in their specialty of gray brick during the past month. The Nashville firm recently secured a contract to furnish 130,000 of these brick to the Alabama School for the Deaf, and also landed a 70,000 order for a hotel at Jacksonville, Fla.

Edwards & Co., prominent clay-workers of Cincinnati, O., are reported to be considering the establishment of a turpentine cup manufacturing plant of large proportions in Chattanooga, Tenn. The Cincinnati firm has secured a seventy-acre tract near Chattanooga containing a forty-foot depth of fine quality clay for this purpose and a switch from the C. N. O. & T. P. R. R. is now being installed, along with the necessary machinery for manufacturing the cups. The plant is expected to cost in the neighborhood of \$10,000.

Mystery surrounds a fatality at the plant of the Chattanooga River Brick Co. in Chattanooga, Tenn., occurring last week. James Riggs, night-watchman for the company, was found dead in the furnace room, wounded in the heart by a bullet from his own revolver. The theory is that Riggs' weapon was accidentally discharged while he was banking the furnaces, as a shovel was clutched in his hand.

The Laddy-Birchy Fire Brick Co., of Fort Wayne, Ala., is reported to be about to install a wet-pan of large capacity for the manufacture of silica brick.

P. H. Dunn, of Hamilton, Ala., is reported to be forming a company to establish a brick manufacturing plant in that city. The plant is to have a capacity of about 25,000 brick per day.

KANSAS CITY AND THE SOUTHWEST.

Kansas City, Aug. 24.—The building atmosphere has cleared up a good deal in Kansas City during the past month. The new union depot project is at last fairly launched, the excavation for the foundation has begun and there is every reason to expect building operations will proceed with a considerable degree of speed. Up to the present time there seems to have been a waiting policy pursued by the railroads, one excuse after another was advanced for not starting, and finally a re-grading ordinance was asked, to reduce the grade of the tracks running through the city to the depot. This ordinance has now been passed and the railroads have approved, so it appears the last excuse for delay has been overcome, and contractors say that the beginning of the real work on this building is the signal for building operations to liven up in other directions, and that a great many large buildings are to be erected soon, especially in this new union depot district. The Geo. A. Fuller Construction Co. has been awarded the contract for building the depot, and are letting out a good part of the work to sub-contractors. It has been stated by them that preference will be given to Kansas City contractors, that is, price being the same the Kansas City firms will get the business.

Up to the present time, this year, building operations have largely been in the direction of large office buildings and small homes, the month of July, for instance, shows 124 more building permits issued than in the corresponding month of last year, but the total value of the permits was \$828,569 less than in July of last year.

The brick business has been dull, along with all other kinds of building material, and in fact all kinds of business. There seems to be no exception to the rule of poor business this summer. In the brick line, however, the dealers are of the opinion that the immediate future bids fair to bring them a fine business. A number of the local plants have been shut down practically all summer, while others have been working part time. The Kansas City Hydraulic Pressed Brick Co. has been operating two plants the past month and has been hustling to keep its own teams busy delivering, while a year ago they were hiring a lot of teams to help in the delivery.

The Lyle Brick Co. has been operating both of its plants and finding a very good demand, while the Flanagan vards have been operating steadily but most of their product has been used by their own construction company, which is doing a big business in building small houses.

According to builders the big dropping off in the building line this summer has been in the way of apartment houses, flats and hotels, as few of these have been built, and for several years they have been a large item in the consumption of brick.

A Kansas City jobber reports that over half of the Kansas plants are idle at this time, and have been throughout the past month, among those enumerated which are now doing nothing are two at Humboldt, two at Tyler, two at Fredonia, one at Elk City, one at Peru, one at Chanute, and the Altoona plant partly closed; one at Caney, one at LeRoy, which is in the hands of a receiver, and two at Cherryvale.

The price of brick here remains very low, being about \$5.50 to \$6.00 on board cars, or at the local plants, delivery charges extra.

There has been a dry area in the neighborhood of this city and this drouth has been blamed largely for the small business in common brick. It is said that in sections

where the rains have come at the right time there is a pretty steady demand for brick, and local dealers are good customers at the low prices, but plants are making nothing at the figures mentioned, and depend upon face brick or paving brick to make their profits.

The Waxahachie Brick & Earth Co. has been incorporated in Waxahachie, Texas, with a capital stock of \$60,000, by G. W. Coleman, E. C. McCartney and T. J. Spencer.

The Cainsville Brick Co. of Cainsville, Mo., is now operating its plant, having burned its first kiln about a month ago.

The Commercial Club of Coleman, Tex., is looking for a brick manufacturer to establish a plant there, and says that it will guarantee a big demand for the product of the plant and an unlimited supply of shale.

E. R. Norton, J. M. Caldwell, F. C. Bush and others are organizing a company in Benton, Ark., for the establishment of a brick plant there. The capital is to be \$10,000.

The Midland Brick Co., of Peru, Kans., is putting in the necessary machinery for the making of a dark chocolate face brick, and contemplates giving its entire attention to the making of these face brick.

The Gulf Coast Brick & Tile Co., of Brownsville, Tex., is now making brick at the rate of 23,000 per day, the capacity being 30,000 brick in ten hours. Their tile making machinery is not yet in place, but has been ordered. Six down draft kilns are now at work, and three others are to be built at once.

S. Robbins, of the Greenville Pottery Co., Greenville, Tex., is to establish a plant there with a daily capacity of 20,000 gallons.

The Marshall Brick Works has been organized in Marshall, Tex., with a capital stock of \$40,000. Chas. Cobb, Jr., is president; W. H. Pugh, vice president and general manager; and J. W. Ditwiler is secretary and treasurer.

T. J. Williams and A. N. Davidson are interested in the Lockesburg Brick Mfg. Co., of Lockesburg, Ark., which is building a plant to produce 20,000 common brick per day.

NEW ENGLAND NOTES.

Boston, Mass., August 27.—The contract for the Peter Brigham Hospital has been let and there is therefore a very nice order for brick in sight. Business actually transacted this week has been of fair but not robust proportions.

Many bricklayers are needed at Bangor, Me. There is a general rush in the rebuilding of the burned districts.

There was but little else in the burned district but red brick fronts, built of Bangor or Brewer brick. When the section is all rebuilt there will be a vast variety of fronts with but few of the old red brick. There will be white brick, tapestry brick, terra cotta, granite, cherry brick, Harvard brick, enameled brick, lime and sand lime.

Three additional schoolhouses are to be built in the town of Port Jervis, N. Y., and their material will be terra cotta, practically indestructible by fire. The walls are to be of hollow block.

The I. L. Stiles Brick Co., of New Haven, Conn., are delivering brick for the new Masonic Temple at Wallingford.

Reports from New Britain, Conn., are that all the plants are busy and that the town is in a very prosperous condition.

A \$25,000 brick rectory is being built for the Church of the Sacred Heart at Newton Center, Mass.

The Purington Bros. Co., of Augusta, Me., has burned its first kiln of brick for the season at its yard on the Belfast road, the kiln numbering about 400,000. The company will burn about 1,000,000 brick for the season's work.

THE TEXAS RANGER.

Austin, Texas, Aug. 27.—Building operations and public improvements generally, which require the use of brick, are unusually active here for this time of year. It is predicted by men who are in close touch with the situation that the coming fall and winter will see more advancement in the way of substantial building improvements throughout the state than ever before known. Brick

manufacturers are preparing for this prospective increase in the demand for their product. The cotton production will be a record breaker if the present high condition of the crop is maintained. With good prices the crop will bring an enormous sum of money to Texas and prosperity in all lines of business is practically assured. While the corn crop was almost a failure and the wheat production was considerably below that of last year, the big cotton crop and the splendid yields of other late crops will much more than make up for the shortages of the grains. One of the interesting features of the situation is the recent advent, into this state, of large outside financial interests that have been operating in Mexico. The unsettled condition of political affairs in that country is causing capital to be diverted to Texas, it is claimed. Investments in large industrial enterprises which will require the use of large quantities of brick are promised as the result of the Mexico scare.

Extraordinary developments are now in progress in the lower Rio Grande valley, where, within the last five years nearly a score of towns have sprung up and are making rapid growth. The new brick plants that were installed in that far southern region are doing a large and constantly increasing business. Lon C. Hill will add a tile-making department to his brick plant at Harlingen. In this connection it is interesting to note that many of the farmers of the valley section, as well as all along the Gulf coast territory, are coming rapidly to a realization of the benefits of underground drainage of their lands and this movement is already well started in the vicinity of Brownsville. It is announced by the Indiana Co-operative Canal Co. that it will soon make arrangements to tile drain all of its extensive property. By this means the salts in the soil will be removed and the production greatly increased, it is stated. It is predicted that within the next few years an enormous demand for drain tile will have been created in the lower Rio Grande valley and all through the Gulf coast region of Texas and Louisiana. Practical farmers from northern states who know the benefits of tile drainage are settling upon the lands of this big scope of territory and it is through them that the demand for tile is originating.

The D'Hanis Brick and Tile Co. is meeting with remarkable success in the manufacture and sale of brick. Its plant is situated at D'Hanis, Texas, a small town situated sixty miles west of San Antonio. It is selling its product all over Western Texas, covering a territory nearly six hundred miles wide. It is furnishing two million brick for the erection of handsome government buildings at Fort Sam Houston and is also supplying the government with brick for the new federal building, at Eagle Pass. The product of the plant of this enterprising company has also gone into a number of new and handsome buildings in Alpine, 370 miles west of D'Hanis.

In an investigation that was recently made of the clay resources of the territory along the route of the Kansas City, Mexico & Orient Railroad in Western Texas, between San Angelo and Fort Stockton, it was discovered that several large bodies of clay, suitable for brick, exist there. The railroad in question directed the investigation and it is expected that it will endeavor to bring about the development of the resources. There is a great need for brick plants in many localities of Western Texas, it is claimed.

There has been a noticeable slackening of the demand for pavers all through the state during the last few weeks, but it is thought that the situation with respect to this class of brick will improve in the fall. Many of the cities and towns have under consideration tentative plans for street paving.

Four men were injured, recently by the collapse of a brick kiln at the C. E. Williams brick plant, at San Antonio.

The popularity of the iron spot brick manufactured by the Hydraulic-Press Brick Co., of Omaha, Neb., is shown by the fact that they are now shipping them for two large Burlington depots, one at Princeton and one at Moline, Ill.

The reports are that the brick and tile factories at Omaha turned out products to the amount of \$375,000 in 1910, while the jobbers did business to the amount of \$2,610,000. Much of the brick was sold in Omaha, where many buildings were erected. It is said that the trade in this line for 1911 will probably be by far the largest in the history of the industry there.

Oil burners are being installed in the Peru, Kan., plant, which will end the gas troubles. The shale there was recently tested and found especially desirable for buff brick. Mr. Carroll and his associates plan to make the plant a first class one in every way.

The Union Brick Co., at Cherryvale, Kan., shipped 60,000 brick to the board of county commissioners of Arapaho county, Okla., to be used in building a new county jail.

The failure of the southeastern Kansas gas fields evidently has not injured the brick industries of Cherryvale, according to the statement of local brick manufacturers, although it has revolutionized the methods used, nearly all the brick now being made at Cherryvale being burned with oil. The failure of gas increased the cost of production, but all the manufacturers were affected in the same manner, and for this reason there is as much to be made in the brick business as there was ten years ago.

At a recent meeting of the stockholders of the American Vitified Brick Co., Caney, Kan., the following officers were elected: O. A. Kentner, president; John D. Paul, vice-president; E. N. Gause, secretary and general manager; J. D. Canary, treasurer. The condition of the plant and its business was reported to be in a very satisfactory state.

Prof. Erasmus Haworth, of the geology, mineralogy and mining chairs of the Kansas State University, has been the guest of Ira E. Lloyd, in Ellsworth, Kan., recently, where he gathered many samples of light clay which he took to Lawrence for the purpose of testing. The professor was very favorably impressed with the appearance of the Ellsworth County clay, and declares it his opinion that this county has a clay that will prove to be of great commercial value in the near future.

The State University of Kansas is just completing a plant for testing and making experiments with clays, the object being to determine their value and availability for building and tilemaking.

Walton W. Gilmore was recently awarded the contract by the city commission of Topeka, to construct 43 blocks of sidewalk this summer. His bid of eight cents per square foot for brick was the lowest received, and was equal to City Engineer Young's estimate.

The plant of the Parsons Vitified Brick Co., Mound Valley, Kan., was sold at receiver's sale June 29th, by the district court of Labette County.

THE GREAT NORTHWEST.

The Bandon (Ore.) Brick and Tile Co., has opened its plant and will now employ fifty men.

A rehearing will be given by the railroad commission at Madison, Wis., relative to the recent order for reduced freight rates. The Wisconsin Brick Mfrs. Association has urged the commission to adhere to its reduction order.

The Acorn Brick & Tile Co., at Albert Lea, Minn., have begun operations at their new plant and it is a busy place with buildings still being erected and the plant busy filling orders.

The Hebron (N.D.) Brick Co., are planning the establishment of a plant over the Canadian line and will ship their clay from Hebron, thus avoiding the duty on brick, as clay is entered free.

The Hydraulic Pressed Brick Co. furnished approximately one-half million face brick for a building being erected at Mosinee, Wis.

The Albany (Ore.) Brick Co. has made one million brick this season, which is the largest record they have made to date.

The Twin City Brick & Tile Co., at Kennewick, Wash., have booked orders for a million brick since the first of the year, to be used in the construction of school buildings in that district.

Stennerson Bros. Pelican Rapids, Minn., and T. C. Halvorsen, Ada, Minn., are planning to organize a company to take over the brick yards at Ada, Minn.

C. Harder of Le Sueur, Minn., has recently been installing new machinery, largely increasing the capacity of his brick yard.

A brick yard has been installed at Three Pines, Oregon. The promoters are G. H. Clark, L. Gelenger and L. T.

Corliss. The company will furnish brick to local builders and contractors.

The Knupp Brick & Tile Co. has erected a plant for the purpose of manufacturing brick and tile on a large scale near Burlington, Wash.

The railroad companies have appealed against the recent order of the Wisconsin railroad commission reducing rates on brick 20 per cent, while the Wisconsin Brick Manufacturers' Association urges the commission to abide by its reduction. The commission has taken the matter under advisement.

The Barr Clay Products Co. has opened an office at Kenyon, Minn., in the building formerly occupied by C. J. Becken. The company has sixty men and twenty teams at work erecting its plant at Wanamingo, Minn.

The Brillion Brick & Tile Co., Brillion, Wis., secured the contract for 250,000 brick to be used in the construction of a milk condensing plant at Denmark, Wis.

A dry shed 100x12, at the plant of the Washington Brick & Tile factory, Washington, Iowa, was burned recently. There was no insurance.

The La Grande, Wash., brickyards are in a state of transition and reorganization. The owner and manager of the yards died last year after operating the plant two years. John Wilson is running the plant under an agreement with the administrator.

The plant is equipped with a Wellington Machine Co.'s soft mud machine. There are 16 drying sheds, with a total capacity for 325,000. The clay deposits cover several acres and the clay bed runs to 30 feet in thickness.

The Walla Walla (Wash.) Brick & Tile Co., of which G. H. Snell is president, Sam Looney vice-president, and C. L. Radcliff secretary, treasurer and manager, will burn 2,500,000 brick this year; 1,000,000 has been marketed and 700,000 are now set and ready for burning.

While many of the brick manufacturing plants in the Northwest have shut down for the season, the plant of the Red Wing Brick Co., at Red Wing, Minn., is still in operation, J. J. Bovey, manager of the plant, is optimistic with regard to the outlook for 1912.

H. A. Nelson, of Rolfe, Iowa, traded land for a brick and tile plant at Churdan, Iowa. Mr. Nelson will retain his residence in Rolfe.

Klein Bros., of Chaska, Minn., have added a gasoline engine to the equipment at their brickyard.

CONDITIONS IN CHICAGO.

Chicago, August 27.—The present year will not soon be forgotten by the clay products manufacturers here. There has been one series of labor troubles after another, and these have caused a serious setback to the demand for building materials of all kinds, and in particular has it affected the structural materials situation. The beginning of the year looked as favorable as could be hoped for, and the demand showed a very pleasing increase for a time.

The brick strike came and the other strikes with it and after that, the whole situation was changed. Outside of the city there was a fair amount of business. However, business as a whole did not increase as was expected and the strikes only added to the depression. After the settlement of the brick strike, the demand for brick was greater than the supply for a time. Even now there has been only a slight let-up in this call, and still the brick people will, on an average, have had a rather unfavorable year.

How to avoid or to settle these labor troubles before they advance too far should be one of the questions for the consideration of all parties interested. Little is ever gained by either party, and the losses are always great on both sides. If the labor trouble could be eliminated from the situation there will be much to be thankful for.

The cement manufacturers are feeling the slack times also. Reports indicate that there has been a very decided decrease in the call for Portland cement. The plants increased their output to such an extent that there was a lowering of prices and then a close down in some instances. This is the natural outcome of the situation, and there does not appear to be any great or early indications of a more pleasing change.

Building and face brick are in fair demand now. Prices

remain steady and the supply on hand is very small. The plants are being operated as usual and the movement is good. Sewer pipe is in reasonable demand, though there has been some decline in the demand for this commodity of late. Prices have not shown any variation of late. Fireproofing, conduit, flue lining and other clay specials are moving along with only a moderate call. It is expected that there will be only a small demand, for at least a few weeks yet.

Paving brick, terra cotta and fire brick, among other lines, have in a way, some encouraging prospects. There has been no line showing an extraordinary demand this summer, and no rush will likely take place until the fall demand materializes. However, everyone feels hopeful over the outlook.

Mr. Chas. S. Reed, president of the Chicago Retort and Fire Brick Co., is in the North, enjoying a trip on the lakes. He will be absent for sometime as yet. The report at the office of this company was most favorable. There has been during the summer months a good and continued demand for all fire clay commodities, with the indications just as favorable for the fall months.

Mr. Matz, of the S. S. Kimball Brick Co., says that this has been a rather uninteresting summer for face brick. Labor troubles have had a hand in this that has been most noticeable. The demand for face brick has at no time been more than ordinary and it is difficult to say now how the fall may develop. Much is hoped for but how much will be a reality it remains to be seen.

The National Brick Co., feel that there will be only a moderate fall demand for building brick. This is gathered from the present situation, though, of course, there is room for an error in this belief. The plant is still operating and brick are moving along. The back and rush orders, consequent upon the strike, have been about completed. Mr. Weber, president of the company, is absent from the city.

At the office of the Chicago Hydraulic Press Brick Co., the reports indicate a slow call for face brick. There has been a limited call for brick in the summer months, and the outlook now does not favor a great increase. This may become more noticeable later, and there is reason why some more activity should be noted with a fall increase in building operations.

Thos. Connolley has found the call for sewer pipe to be only normal, if not a trifle less so. There has been no special reason for this, and still the fact is there. Some other lines of clay goods are about in like demand. How the fall will develop, it is hard to determine now. Prices are so low that there is far less satisfaction in doing business than were the case otherwise.

The Wisconsin Lime and Cement Co. note a like dullness in the face brick demand. Mr. Cormack is out of the city and the reports are to the effect that there will not be a great increase in the near future as far as can be ascertained now.

Arthur Smart, 1348 Main street, Evanston, employed by the Illinois Brick Co. as a locomotive engineer, was reported to have been seriously injured recently when he was caught between his engine and a car.

Angelo Balastro, 400 South Western avenue, Chicago, was instantly killed when a portion of a cement wall at the drilling house of the Western Electric Co. fell upon him.

Four men employed by the Illinois Brick Co., while moving a dredge in a clay hole, were knocked to the ground and stunned, recently, when the dredge came in contact with an electric wire of the Chicago City Railways Co.

The Chicago Fire Brick Co. has joined the colony of building material concerns locating in Auburn Park. This concern, of which W. J. Gilbert is president and manager, has purchased a plot of land between Ashland avenue and Laflin street and Seventy-sixth and Seventy-fifth streets, 375x600 feet, from the estate of David B. Sherwood, and will improve it with a brick warehouse to cost \$20,000.

The Wisconsin Lime & Cement Co. and the Thomas C. Moulding Brick Co. have acquired two large tracts at Peoria and Seventy-fifth streets, which they plan to occupy with their business.

It is charged that in the Chicago district 31,300 cars of brick would be affected annually by the changes in

minimum weights on car load shipments. The present rates of a minimum weight of 20,000 lbs., it is declared, are sufficiently remunerative and the increased charges will tend to divert traffic to other centers and increase the cost of building construction.

The Alonzo Curtis Brick Co., of Grant Park, of which Hon. E. C. Curtis is president, has re-incorporated under the name of the Curtis Brick Co. and increased its capital stock from \$100,000 to \$500,000, of which \$300,000 is common and \$200,000 preferred, all subscribed for.

The enlargement of the capital stock was necessary to handle the increasing business of the company, which now amounts to half a million dollars annually, the output amounting to 80,000,000. The parent plant is at Grant Park, with branch plants at Manteno, Beecher and Chicago, the latter at Archer avenue and California street.

The company has recently installed a large amount of the most modern machinery and equipment and will probably double the capacity of the yards this season. Besides the constant demand in Chicago and vicinity for the Curtis output, shipments are constantly made to points in all the large cities of Illinois and Indiana as well as to more distant states.

Senator Edward C. Curtis is chairman of the board in the new organization and V. S. Curtis is the president.

WEST VIRGINIA.

Wheeling, W. Va., Aug. 27.—This state possesses the champion paving brick and paving block layer in the United States in the person of J. G. West of Parkersburg, who during the last summer has been working on the new brick pavements in East Liverpool, O. West is "officially" known as the "brick dropper" and he is an expert in his line. Contractors who have employed West declare that he holds a record of "dropping" 116 brick per minute, this when the carriers and helpers have them ready and placed properly for him. His average day's work is said to be placed at 37,000 brick which is enough brick to pave a street 50 ft. wide and 185 ft. in length. When he completes his contracts in East Liverpool, West will go to Huntington, this state, where his services are being bid for.

The time was up August 20, for the filing of briefs in the case pending before the Interstate Commerce Commission which grew out of a contention raised by brick manufacturers in the Ohio basin. The Railroads have until Sept. 10, to file their briefs. Time for the oral arguments have not been set.

At a meeting of the Davis-Price Foundry & Machine Co. held at the general offices of the company at New Cumberland, W. Va., the following officers were elected for the fiscal year: President and treasurer, J. L. Gilchrist; vice-president, T. J. Shaw; secretary, Mrs. Amy Francy; general manager, A. M. Shetter. The company has bought adjoining property in order to have a Pennsylvania railroad siding constructed to its plant.

With a capital stock of \$50,000 the Michaels Coal Co., has been formed at Clarksburg. The concern will manufacture brick. E. Fred Rogers of Clarksburg is at the head of the company.

Elmer DeLap of Jarratt, Va., is seeking the address of manufacturers of brick and drain tile machinery.

At Grafton, this state, the Grafton Tile Co., is expecting to land the contract for the stations for the proposed new subway in New York which will be worth probably \$1,000,000.

After a brief suspension of work, the plant of the Suburban Brick Co., of Wheeling, W. Va., has resumed operations in full. The plant is located on the Ohio side, between Bellaire and Bridgeport.

The Thomas D. Prosser Co., with general offices in the Schmulbach Building, Wheeling, W. Va., has been appointed a representative of the sales department of the Walker Brick & Tile Co., of Dillonvale, O., manufacturers of common red and face brick. A complete line of samples of the Dillonvale plant will be maintained in the Wheeling office.

CITY OF BROTHERLY LOVE.

Philadelphia, Aug. 23.—The summer so far has not developed the amount of business that many looked for. It has been somewhat quiet and the usual amount of

building for the summer has fallen off somewhat. Business in all lines has not been up to the top notch and has affected the building lines as well. There has been in the past few years a great deal of building done, and some think there was a surplus and the situation will have to right itself in time.

While some plants here sold most of their output, others have reduced their output so as to keep even with the demand. A few months ago there were 500,000 brick in each district where they are made and during the summer, there has been 3,000,000 in the same districts on hand. There has been a surplus, and sales slow. It costs 50 cents a thousand more to keep, handle and store brick than it does if they are shipped immediately after being made. There has been a considerable number of orders for brick for building small homes. It takes from 25,000 to 30,000 common brick and 1,000 face brick to build the ordinary small house, but in the country districts, where larger ones are usually built, it will take 100,000 brick or down to 50,000.

John McGraw will build 186 houses of brick at West Philadelphia to cost \$837,000.

The Darlington, (Pa.) Brick & Mining Co., whose offices are at 1002 Crozer building, say that a new boiler outfit has been put in at their plant and electric haulage has been installed at the mines to cost \$15,000.

The Corry (Pa.) Brick & Tile Co. have enlarged their output by the addition of two more Yates down-draft kilns and have also built a new office. They now have a capacity of 50,000 brick a day.

The O. W. Kitcham Terra Cotta Co., with works at Crumlyne, Pa., and offices in the Builders' Exchange, have recently built an addition to their plant, which will be used for pressing and burning. This will increase the capacity considerably.

The Clearfield (Pa.) Clayworking Co. have taken an order for 7,000,000 paving block for Altoona, Pa. This contract amounts to \$350,000, as their product is well known and gives good satisfaction, it is in demand in many cities.

The Chambers Brick Co., have had many orders for machinery the past year and have at times been obliged to work a night shift.

The Beaver (Pa.) Clay Manufacturing Co. have bought the plant of the Beaver Valley Roofing Tile & Terra Cotta Co. at McKinleys Run, which plant has a capacity of 20,000 fire brick a day.

The Mack Construction & Paving Co. have moved their offices from 2042 to 2242 Land Title building and say that business has been good so far for this year. Their contracts are ahead of last year by about 1,000,000 paving brick, for the same length of time. All the plants they represent are running at full capacity, and prices are a little better than those of last year. The brick made last year amounted to 30,000,000.

Frank Kelly; Edward Kelly and Robert D. Hamilton have formed the Keystone Brick Co. and have taken over the old Martin plant at Sixteenth and Butler streets and have built a new plant at Lawndale, a suburb.

Thomas Robinson Co. say prices have been maintained, the yard trade is dull, but there is considerable contract work.

The Watsontown (Pa.) Brick & Clay Products Co. have spent \$30,000 in improving their plant which is very busy. They are now able to get out one-fifth more goods than formerly.

The American Brick Manufacturing Co., of the Land Title building, are very busy on face brick which are selling as before at \$20 to \$25 a ton. They are looking for a good year, have greatly improved their plant at Wilmington, Del., increased the capacity and added more kilns. They have put in electric power and built a new office. Some of their large contracts here now are for Dr. J. B. Mayer, E. R. Hutton, Harry Smith, Mallett Bros., John McGraw, the Zanes, Frank Mark, E. J. Sharp, Singer Bros. and others. Most of these are large operators. McGraw's operation is for 186 houses. W. C. Brister is president of the American Co., Frank Mark treasurer and R. Hutton secretary.

The Clymer (Pa.) Brick & Fire Clay Co. are very busy and have orders on hand for months ahead so that they are running the plant day and night. They make building

and paving brick and are now taking up a new line of fancy building brick.

The Rosenhayn Face Brick Co. have a plant at Vine-land, N. J., which is not now in operation. The city office has been discontinued.

S. H. French & Co., handlers of tile, say that trade conditions and prices are nearly normal and prospects are fair for the balance of the year. Tile is being used more and more every year for flooring and has outlived all imitations.

H. Nicholson of Scranton, Pa., and O. Fuller and C. S. Aiken of Trenton, N. J., have incorporated the American Brick Co., with a capital of \$50,000 at Trenton.

The Alden Brick Co. of 148 North Second street have rented their brick plant at Alden for one year to S. F. Ream, who is working the plant. The product, however, is still sold from the office here.

A. B. Kready and others have purchased the plant of the Mountville (Pa.) Brick Co., have put the plant in first class shape and are operating it.

Mr. Graham of Louisville, Ky. is opening a clay mine on the Martin farm, near Duff, Ind.

The Wilmington (Del.) Brick Co. are again opening their plant, which was closed for a time. They carried considerable brick over from last year, which has all been closed out.

OUR BUCKEYE LETTER.

Columbus, O., Aug. 24.—Business among the brick and sewer pipe manufacturers of Ohio is holding up very well, notwithstanding the fact there has been more or less complaint that for the amount of energy that is being expended, orders are not quite up to what they might be. True, there is considerable road improvement work being done in Ohio, with the result that all of the paving brick and paving block manufacturers are as busy as they could be expected to be.

Although a company has been formed, no construction work has been started as yet on the new plant of the Summitt Brick Co., which will be built at Summittville, O., on the Pennsylvania railroad between Alliance and East Liverpool, O. Both building and paving block will be made. The company was formed at a meeting held in Wheeling, W. Va., with the following officers: President, G. G. Christlieb, vice president, Thomas W. Noeton; secretary-treasurer, Oliver G. L. Beans, of Wheeling; general manager, Ross Rue, of Alliance, O. Mr. Beans is the general manager of the Bradstreets Commercial Agency in Wheeling, and is a native of Steubenville, O.

Sales of both building and paving brick by the Alliance Brick Co., of Alliance, have been so heavy of late, that the plant will be kept in constant operation the remainder of the year.

Indian relics and a skeleton were dug out by clay diggers, employed at the clay banks of the Diehl Brick & Tile Co.'s., plant at Defiance, O., recently. An arrow head was found in the soft skull bone, which was a mute story of how the Indian was killed. The Diehl Company is doing a nice business, having recently closed some good contracts for building brick.

The Walker Brick & Tile Co. of Dillonvale has been awarded a contract for 100,000 brick to be used in the construction of the new warehouses of the Laughlin tin plate plant at Martins Ferry, O.

As a result of a dispute over their wage scale clay miners in the Puritan Mining Co.'s., mines at Wellston, O., struck. The men wanted 30 cents per ton for mining, the men to furnish their own blasts.

Because of a rush of orders at the Malvern, O., plant of the National Fireproofing Co., three shifts of men were put to work re-opening the old No. 6 mine, which was first opened 21 years ago.

According to a story heard in brick circles here, a well known brick manufacturing concern at Toledo is contemplating the removal of its plant from that city to Cincinnati. It is also said that an \$18,000 plant will be built in "Cincy."

The Holden Clay Products Co., of Mineral City has increased its capital stock from \$10,000 to \$75,000. The Maynard H. Murch Co., Hippodrome Building, Cleveland, is the owner of the property.

THE SMOKY CITY.

Pittsburgh, Pa., Aug. 26.—After many years of diplomatic labor upon the part of those interested in the increased sale and use of terra cotta for fire proofing construction, the City Council of Pittsburgh has at last passed the necessary legislation which permits of the further use of this material. It was a long fight as well as a hard one to have this piece of legislation enacted, for it did seem that a few skeptics were among the law makers. However, those from Missouri were "shown," so to speak, with the result that an ordinance was passed. Among the provisions are the following: all hollow tile used in the construction of walls or partitions shall be hollow terra cotta well manufactured and free from checks and cracks, each piece or block to be molded square and true and to be hard-burned so as to have a good clear ring when struck, and not to absorb more than 12% of its own weight in moisture. Each of said block should develop an ultimate crushing strength of not less than 3,000 lb. per sq. in. of available section or web area, and shall not be loaded when in the wall more than 80 lbs. per sq. in. of effective bearing area.

Tile shall have outer shells or walls not less than $\frac{3}{4}$ -inch thick and shall be additionally reinforced by continuous interior walls or webs which shall not be less than $\frac{1}{2}$ -inch thick, and so arranged that no void shall exceed 4 inches in cross section at any point.

No foundation wall of any building or any party wall shall be constructed of hollow block or terra cotta tile, and no hollow tile or terra cotta wall or partition shall be supported in part or entirely by any wood nor other combustible beams, girders or post.

No story height shall exceed 10 feet clear, measured from the floor to ceiling except in case of one-story buildings where they may be 12 feet clear.

When the floor or roof load is applied to bearing or exterior walls in concentration of two tons or more at one place, a solid pier of brick, reinforced concrete or concrete filled tile shall be used under each concentration.

Whenever floor slabs or joints rest on a hollow terra cotta wall composed of tile with voids set vertically, or wherever a change in thickness of wall occurs, the course upon which the joints or slabs rest, or upon which the thinner wall rests, shall have the voids in the tiles or blocks in the course so bearing the load completely filled with Portland cement concrete and so constructed that no joist, timber or other material whatever shall bear or transmit a load to the wall without having an iron, first quality of hard brick or terra cotta bearing plate, or concrete filled or solid block under the same at the point where the load is transmitted.

Further, that in all parts of the city, within the fire limits, no interior joists or woodwork shall be within four inches of the outside of the exterior of the wall.

Considerable roofing tile is being sold in the Pittsburgh district this season for the finer residences, and because of this fact Scott A. White, who represents a number of roofing tile concerns has had a good season. Mr. White has offices and sample rooms in the Lewis Block, and recently closed a contract for roofing tile to be placed on the \$150,000 residence to be built at Dawson, Pa., by Mrs. Sarah B. Cochrane.

The Harbison-Walker Refractories Co., of this city has decided to build a new pattern and machine shop at its plant at Portsmouth, O.

P. M. Davis, and C. V. Hackman, employed for many years by the Harbison-Walker interests as district superintendents have tendered their resignations, and it is reported they will become identified in a financial manner with a new silica brick plant which is to be built in the vicinity of Mt. Union, Pa. Mr. Hackman has been in charge of the Mt. Union plant of the Harbison-Walker Company for a number of years.

The task of rebuilding the burned plant of the Allegheny Valley Brick Co. will be started at once, according to Manager R. W. Hay at Tarentum, Pa. The company has orders for nearly two million building brick on its books.

OUR EASTERN LETTER.

New York, Aug. 22.—Common brick in the New York market is in heavy demand. Prices run from \$5.87½ to \$6.00, although some brick is bringing as high as \$6.12½.

An attempt was made on Aug. 16th to advance the price of brick a quarter a thousand, but this did not meet with the success anticipated, because the dealer, forewarned, regarding the projected raise, stacked heavily at the five-eighths level.

So extensive was this stacking process that the cargo arrivals for last week exceeded the figures of the preceding week by forty-five, making the total incoming cargoes 95, or 33,250,000 brick from the Hudson River district alone. This is almost unprecedented, especially in a moderate building year.

The beneficial effect of the new brick selling system was strikingly shown in the perfect control of shipments immediately following this raid. Instead of the usual promiscuous unloading by all manufacturers, those whose average sales since the first of July had been lower than the others received the benefit of the run. Of course those companies which manufacture a high grade of brick and always command top prices will be benefitted when the market reaches its normal condition after Labor Day.

The New Jersey situation is still an active one. Prices are bringing almost \$7.00, yard, Newark. Connecticut brick has not come into the New York market to any extent heretofore, but if the demand for Hudson River brick warrants a minimum price of \$6.25, which is not at all improbable after the 15th of September, it is more than likely that Connecticut brick will compete with Hudson River and New Jersey brick in this district.

The unusual condition of the New York money market, which featured the last few days, during which liquidation was conspicuous, gives evidence that more capital will shortly be available for building operations in this district. The Metropolitan Life Insurance Co. is taking a leading part, this fall, in small building operations. This company is the largest lender of money on building operations in New York City, and when it recently announced that it would build 195 homes in the Mapleton section of South Brooklyn, at a total of \$643,000 other investing companies immediately came into the market for building money, and the result was a liquidation of securities on such high plains as even the United States Steel, American Biscuit, Reading, Pennsylvania, Chicago, Burlington and Quincy, and New York Central stocks.

This has had the effect of giving brick and practically all building materials in the Eastern market a very satisfactory movement. In connection with the foregoing, it is interesting to note that the Metropolitan Life Insurance Co. will build their new structures entirely of common and front brick, from foundation to roof.

A fire at the stables of the Empire Brick & Supply Co. at 150th St. and East River completed gutted the building and burned fifteen horses alive, causing a loss of about \$5,000.

The Garden City Co.'s unit brick works at Hempstead, N. Y., under the superintendency of A. T. Conran is supplying brick for the hotel addition there.

Frank Patterson, attorney for several brickmakers in New York, has offered to build two buildings, one of brick and one of concrete, to be burned down in the presence of Mayor Gaynor and the city officers to show that brick is the best material of which to construct the the twenty-one new fire-houses to be built there.

AWAY DOWN SOUTH IN ALABAMA.

Birmingham, Ala. Aug. 26.—Prospects for fall business are brighter, here, than they have been at any time in the past few years, in fact, since the panic of 1907. Building work is picking up in every way and street and sewer work throughout the South have taken a rapid advance. Brick-makers of the Birmingham district expect to have more business than they can well handle this fall. Work upon the superstructure of the eighteen-story office building for the American Trust & Savings Bank has almost been finished. A twelve-story hotel costing several hundred thousands of dollars is to be built shortly in addition to many brick buildings of lesser note.

J. W. King of the Vail-King Supply Co., of Birmingham has bought the interests in the business of T. L. C. Vail and A. R. Boone, secretary and treasurer and vice-president respectively, and is now the sole owner of the business. The name of the concern has been changed to the King Supply Co. representing the Maryland Terra Cotta Co. and the Hydraulic Press Brick Co.

The Graves Shale Paving Brick Co., of Birmingham, on account of its greatly increased business, is having many improvements made at its plant at Graves, Ala. The capacity of the plant will be increased by 10,000 brick per day, from 30,000 to 40,000. More improvements for the development of other clay beds at Graves will be installed later on.

The Southern Sewer Pipe Co., of Birmingham has recently secured contracts as follows: to supply the City of Pensacola with sanitary and storm sewer pipe needed there for work now in progress; and sanitary and storm sewer pipe for Mobile, Ala., for a \$90,000 job upon which work has already started.

The Riverside Brick Co., at Riverside, Ala., has been put in operation after a shut down of many months. The plant is now working under new management which made many improvements before starting up the plant. The new owners are W. Morris and O. B. Morris of Columbus, Ga.

The Builders' & Traders' Exchange of Birmingham held its annual outing on Saturday, August 12, at Edgewood, a few miles from Birmingham. J. W. Sibley, of the Sibley-Menge Press Brick Co., is president of the Exchange. Despite the rain, which lasted all afternoon, the members of the Exchange made merry and refused to let the inclement weather interfere with either their appetites or thirst. A baseball game was scheduled between the contractors and the building material men but was killed by Jupiter Pluvius. The barbecue was one of the most enjoyable yet held by the Exchange and everyone had an excellent time.

The Macon, Ga., China Manufacturing Co., is the name of a new concern in Macon, which is really a successor to the Summit China Co., of Akron, O., as the entire plant will be moved from Akron to Macon, by the owners, to wit, R. H. Kent, W. H. Bettelbach, F. H. Beurbach, and L. K. Force. A site with four walls has been furnished by the Macon Chamber of Commerce. On account of the prohibitory freight rates on the natural product from Georgia to Akron and the great trouble over shipping same, the owners of the Summit China Co. decided to move the plant to Macon, where excellent shipping facilities are to be had. Plans are now being made for the building.

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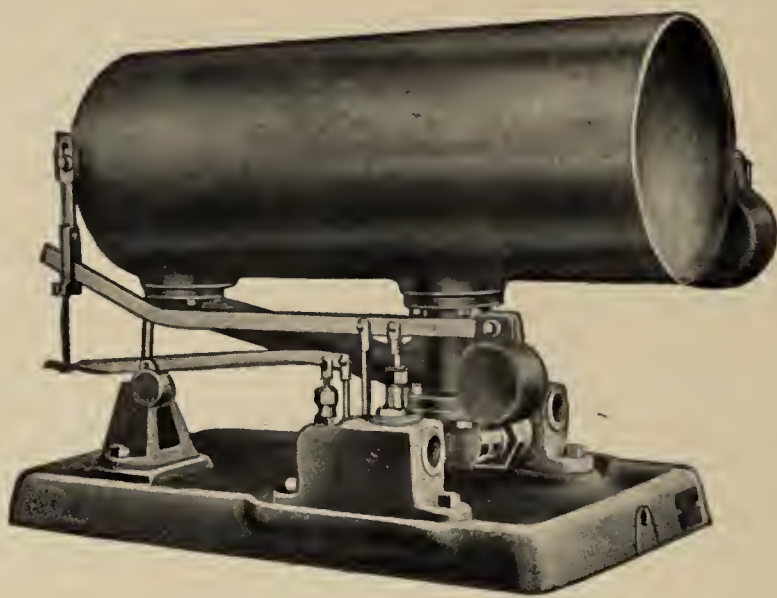
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Table of Contents

	Page		Page
The Perfect Country Highway	Frontispiece	Time by the Forelock.....	222
Why Brick is Best.....	201-202	Home of the Swift Dryer and Kiln.....	223-224
Ohio's Brick Paved Highways.....	203-208	Booming Good Roads.....	226
Classification and Manufacture of Paving Brick, by Ellis Lovejoy, E. M.....	209-210	Drain Tile and Drainage—Perrysburg Tile & Brick Co.—Tile Used in Good Roads	227
Municipal Advertising in Alton, Ill.....	210	Fire Brick and Refractories—Conditions in California—Fire Brick Famine.....	228
Bessemer Steel and Bessemer Brick.....	211	Sewer Pipe News—New Sewers from Old Ones—Only Clay Pipe Can Withstand Acid	229-230
Success Assured—Spoiling a Good Story..	212	General Pottery News.....	231
City Welfare Exposition—Brick Paving in Chicago	213	Sand-Lime Department—Successful Method —They Will Stand Cold Weather.....	232
A National Brick Road.....	214	The Pulsometer as a Pump.....	233
Two and a Half Miles of Country Road to Be Paved with Brick.....	215	Raymond Equal Roll Crusher—New Fea- ture of the Gandy Belt.....	234
Brick Pavement in Grand Rapids, Mich..	216	Trade Review—Sensational Eastern Mar- ket Conditions—Seattle News—Pacific Coast News	235-240
Murphysboro Paving Brick.....	217		
Detroit's Paving Muddle.....	218		
Viticlay—New Paving Brick.....	219		
Editorial Comment	220		
Clay Show Week—They Like Brick Speed- way—Keeping Up the Fight.....	221		



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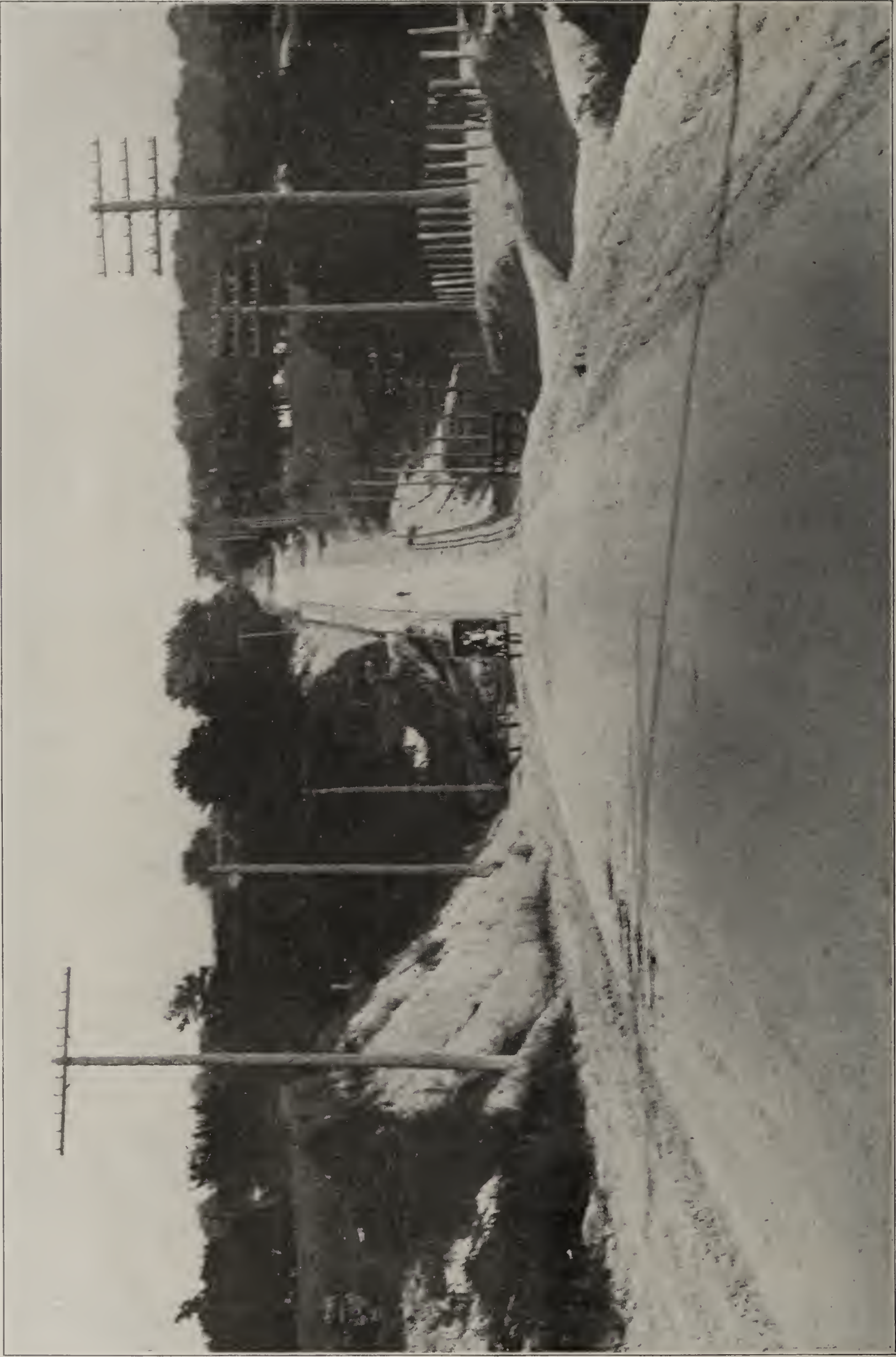
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VOL. XXXIX—No. 6

BRICK

AND CLAY RECORD



SEPTEMBER 15, 1911

WHY BRICK IS BEST

New Traffic Conditions Have Brought Burned Clay Into the Forefront and Established Its Superiority Over All Other Materials as a Road Surface

A review of the history of highway and street construction for the past few years, shows a more rapid development than in any other line of public betterments. The reason for this is the automobile.

New conditions have arisen, making the street and road problems of a few years ago seem insignificant as compared with the difficulties that confront the present day authorities, who are charged with serving the people in this branch of public work. While these conditions and problems are different in country and city, yet it is proper to consider them both in one discussion when the question of the most suitable street and road sur-

above all else, is required economy of maintenance. The automobile is subjecting the road and street surfaces to a largely increased wear and it now requires a constant effort of the street authorities in cities and towns to keep their streets in a passable condition, owing to the havoc constantly played on the surfacing, under the heavy stresses they are subjected to by the pneumatic tires of motor cars.

Formerly asphalt was considered the superior of all material for residential streets and streets where there was light traffic, but asphalt has not stood up under automobile wear and today is the most expensive street



The Brick Pavement on This Cleveland Street, Laid Nearly 11 Years Ago on a Sand Foundation, is Wearing Flawlessly on Account of Proper Construction.

facing material is to be considered. While, in the large cities, the conditions which affect the wear on the street surfacing on those streets subjected to the heaviest traffic have not materially changed, yet on the streets where lighter traffic prevails the automobile has affected the situation fully as much as it has on the country highways.

Modern day municipal progress requires smooth streets for the use of pleasure vehicles and lighter traffic. The people demand dustless streets and roadways that will eliminate as much of the noise of traffic as possible. But

surfacing that can be laid, so far as maintenance cost is concerned. All bitulithic surfaces, and the most costly macadam roadways, are valueless under present conditions. Under automobile wear, the roads very soon become full of ruts, dusty and rough, and are soon ruined. The effect on asphalt while not so rapid, is as certain and no well laid asphalt street can be counted upon for more than five years' use even on streets where there is only light traffic.

To meet present conditions, an hundred different kinds of road building systems and road building materials have

come on the market, mostly of bitulithic nature, or of concrete in one form or another, but one and all, they have failed to withstand the test of practical wear and no matter how costly they may be, they have shown under ordinary conditions, to which they are subjected, that they cannot be maintained properly and kept in decent condition except by large annual expenditures for maintenance, and that even then their life is only limited, for in due time they require replacement and rebuilding.

The reasons for brick's superiority are numerous and cover all the requirements of present day conditions.

First: Brick is the most permanent material for road surfacing. When properly laid it is practically indestructible and if not disturbed should serve for fifty years.

Second: Brick is the smoothest road surfacing material. When properly laid it will retain its smooth surface and severe wear will only improve it. It will not rut and become wavy or bumpy as will other street surfaces.

Third: Brick makes the dustless street or highway. Its surface is so hard that it withstands wear and consequently gives out no dust, except that which is deposited upon it from other sources. Every rain makes it clean and fresh.

Fourth: Brick is not slippery in wet and icy weather as is asphalt and many other road surfacing materials. Horses can stand up on it under all conditions, and automobiles do not skid so easily as on other surfaces. It is the most humane street surfacing for horses. They can secure and retain their foothold on it even on hills, where otherwise they would be likely to slip and fall.

Fifth: Brick paving makes a quiet street. When properly laid, although its surface is hard, it will not produce as much noise from the wheels of vehicles as will asphalt or other materials in their usually rutted, uneven condition.

Sixth: Brick is the most economical road and street surfacing material. While this may seem a strong statement in the face of the fact that the first cost is a third larger than for the best macadam, yet it is fully demonstrated, that considering the first cost and maintenance during a period of six years' time, brick always shows the greatest economy. Time, after all, must be the true test of the value and cost of the roadway. It might be possible to build a very handsome roadway at a very small cost, which for the first week or two would probably answer all purposes, but what would be the advantage of constructing such a roadway or street, if within a few months the work had to be done over again or if the maintaining of it in a passable condition amounted to more in future years than the first cost of a permanent and satisfactory construction?

The time is, therefore, rapidly approaching when brick will be generally adopted as the standard surfacing for streets of our towns and cities. It gives to the streets a character, beauty and permanence that cannot be secured through the use of any other material. A town well paved with brick must create an impression of solidity and substantiality which should be a source of pride to its citizens.

found in Cuyhoga County, in which the city of Cleveland Ohio, and the best rural highways in the country are found in Cuyhoga County, in which the city of Cleveland is situated. There are in Cleveland and in Cuyhoga County a thousand miles of brick paved streets and highways and they are a shining example of the superiority of brick for paving purposes. Municipal and highway authorities visit Cleveland from all parts of the country

and go away fully convinced of the wisdom of the authorities in adopting brick and fully convinced that brick, when properly laid, is the cheapest and best surfacing material.

Many other cities throughout the country have now come to this conclusion and consider it favorably when new streets are to be paved. It is, of course, a serious injury to any street when once paved to be torn up for sewer or conduit work, but this can no more be made a criticism against brick than against any paving material. A brick-laid street once torn up with care can be relaid so that the marks of repairs will not harm the value of the street, although they may always retain the blemish. Many other forms of street construction suffer much greater damage through tearing up for sewer or water work than do those made of brick.

The Country Highway.

The use of brick as a surfacing material for the country highway is a modern innovation and is due solely to the increasing use of the automobile. While motor traffic conditions make brick the best surfacing material for city streets, there are even more reasons why brick should be adopted as a surfacing for the country highways.

One of the most important of these reasons is the suppression of dust. Anyone who has traveled through the country in a motor car must not only have suffered from the choking dust raised by preceding motor cars, but must have observed the injurious effects upon the crops in all fields adjoining the highways. Such fields during the summer are simply loaded down with the drifts of dust which practically kill vegetation or at least make the crops unprofitable. This dust problem has become so serious in the country that many farmers have been obliged to oil the highways adjacent to their properties at their own expense, while in other cases this expensive work of holding down the dust with oil, has been done by the town or county authorities. The oiling of country roads is only another cost added to the cost of maintenance resulting from the automobile wear upon such roads.

A few years ago the farmer considered himself a much injured person because of the sorry effect upon his highways created by the automobile but at the present time, the farmer has himself become a good roads advocate and instead of crying against the expense of good roads, is now eager for road improvement. He realizes the value of economical transportation. He knows that with good smooth roads he can reach town with his automobile in a small fraction of the time formerly occupied and he has learned that in this present advanced day such time means money. He also realizes that with good roads he can reduce the cost of transportation of his produce to market and, therefore, the farmer is today the greatest good roads enthusiast.

It is necessary, however, that the farmer and the people in general should be better educated to the necessity for brick paved country highways. At the present time when the subject is brought up the first cost seems staggering and the cost of maintenance, repairs and replacements are not considered with sufficient care. It is, therefore, the duty of the paving brick men to carry on a nationwide campaign of education regarding this one point of maintenance cost; for if the people of the country once learn the facts about this matter, there will be no doubt whatever regarding the future general use of brick as the surfacing for all of our leading country highways and its adoption in all prominent road improvements.

BRICK PAVING IN OHIO

Ohio—Noted Throughout the Country for Good Roads—One of the First to Adopt Brick Paving for Country Roads

The following interesting article appeared in the "Municipal Journal and Engineer," which devotes considerable space to brick interests:

The paving situation in Cleveland is of unusual interest because that city stands high in the records of the United States Census in the percentage of paved streets in relation both to population and to the length of all streets. Furthermore, one paving material—brick—has been steadily growing in favor until last year over 90 per cent of all the work completed was built of that material, and Cleveland has now more miles of brick-paved streets than any other city of the United States. The history of paving in Cleveland during the past fifteen years will show how brick has displaced other good paving materials and will

Asphalt was the first material to challenge the supremacy of Medina stone in Cleveland. The promoters of this material probably made the hardest, and in some respects the most picturesque, fight that has ever been made in any American city in behalf of any paving material. Committees were taken all over the country to examine and report on asphalt streets, advertising space was bought in the papers and circulars were mailed to property owners and citizens generally in such abundance that after a while sensible people threw them in the waste basket as soon as their eyes caught the word asphalt. In time asphalt was introduced on a number of small streets and on one long one.

At about this same time, however, brick pavements



There are Hundreds of Miles of Brick Pavements of this Type in and About Cleveland, O.

also shed some light on the question as to the extent to which local conditions and the merits of the material have contributed to the result.

Before the year 1889, there had been laid in Cleveland three kinds of pavement—tar concrete, Nicholson wood blocks and Medina stone. The tar concrete was of the sort laid in Washington during the period from about 1870 to 1885, about all of which proved a failure there; and the Cleveland variety was poor of its kind, was a failure from the beginning and little of it was laid. The Nicholson pavements did not prove very satisfactory owing partly to the fact that the tar with which the blocks were treated was too volatile, and because not sufficient attention was paid to the maintenance.

Stone block made of Medina sandstone were also laid at an early period and except for the fact that the blocks were not as well shaped as they were later, these pavements were very satisfactory, some of them giving fair service to this day.

were coming into use in the small cities. From the beginning this class of paving material had an advantage over asphalt in cost, a matter of almost controlling importance where pavements are laid on request of property owners who have the assessments to pay. As soon as a few years' trial removed the doubts as to durability, brick rapidly became the favorite paving material. At first small blocks were used, but these were increased in size later; and the year 1895, which is chosen for comparing the past and the present status of the paving question in Cleveland, marks the time when block five inches in depth came into general use. At the same time the use of the tar filler in the joints was discontinued and cement grout filler was adopted. The first brick pavement, laid in 1889, had sand-filled joints, and a few other streets were laid this way, but in practically all of the pavements laid between 1889 and 1895 tar filler was used. In 1895 the total amounts of all kinds of existing pavements, including cinder, macadam, wood, cobble stone, etc., were as follows:

	Miles.
Asphalt	3.94
Medina stone	85.97
Brick	29.22
Wood	1.46
Cinder macadam .....	.73
Cobble stone .....	.05
Miscellaneous .....	.67
Total	122.04

The amount of work completed that year was: Brick, 5.91; Medina blocks, 7.50; common Medina, 3.06; asphalt, 0.1. The prevailing contract prices per square foot that year were: Medina blocks, 28½ to 31½ cents; common Medina, 21¾ cents; brick 10 to 11 cents and asphalt 33 cents.

The prevailing contract prices were about as follows: 5-inch brick on sand, 14 cents per square foot; 5-inch brick on concrete, 20 cents; Medina blocks on sand, 30 cents; on concrete, 36 cents; asphalt, 23 cents; Medina, common, 26 cents; bituminous macadam, 25 cents.



Nine-foot Brick Road Near Newman, Ill.

The low prevailing contract prices noted above are partly the result of the fortunate situation of Cleveland as regards local conditions and supplies, and partly the result of specialization. Where any one kind of paving material is used in a city to the practical exclusion of others, an opportunity is afforded for the development of a great organization with many ramifications tributary to the industry. In the first place, the soil in the part of the city where pavements were first laid made the usual concrete foundation unnecessary. The soil is a fine sand with some loam, but not enough to prevent it from being very pervious to water. Hence, by the use of water for compacting the soil a sufficiently stable foundation was secured. If concrete had been necessary, the brick paving industry would have been handicapped, because concrete was then much more expensive to lay than it is now.

Cleveland possesses another advantage, in that it is

more favorably situated than any other city of its size so far as propinquity to the brickmaking centers is concerned. The first brick used in Cleveland were shipped in from considerable distances. Porter, Union and Canton brick figured largely in the early days. In recent years, since 1895, five companies have established brickmaking plants within the switching limits of Cleveland—that is, within limits in which the freight rate is 25 cents a ton to any point within the district. These companies are the Deckman-Duty, at Collingwood; Metropolitan, at Willow, and the Newburg Brick and Clay Co., the Cleveland Brick and Clay Co., and John Kline & Co., at Wickliffe. The history of the Bessemer brick affords an interesting sidelight on the development of a source of supply as the result of a great demand. These brick are made by a company in Youngstown whose principal business was the quarrying of limestone. Over the bed of limestone was a bed of shale that had to be removed and was a source of expense in the regular business. To utilize the waste, the manufacture of paving brick was undertaken and the brick were shipped to Cleveland. In time the brickmaking became a bigger industry than the limestone quarrying. Later, when the competition from plants nearer Cleveland became pressing, expensive continuous kilns were introduced and the cost of manufacture so reduced that the 65-cent freight rate was not prohibitive. Four-inch paving brick can be bought for about \$16 per thousand in Cleveland and five-inch block for \$20, both running about 40 to the square yard.

Cement, too, is low in Cleveland, water competition making railroad rates low; moreover, Portland cement is made at Sandusky and other nearby points. Sand for grout and coarse sand for ballast or cushion is supplied by a company that dredges with pumps from the bottom of Lake Erie. This company has excellent facilities for unloading from the scows and transferring to cars. The third material used in concrete, stone, is not so cheap in comparison, but is no more expensive than in many cities. Limestone may be obtained from immense quarries owned by the Kelley Island Company, Sandusky, and a hard sandstone is obtained from a quarry near the city. Crushed stone costs about \$1.25 per cubic yard on cars anywhere in the city. At the iron furnaces near the city, slag is crushed, which also is used for foundation purposes.

In cost of maintenance and durability brick pavements have made good in Cleveland. Since the first pavement was laid, in 1889, only two streets have given out sufficiently to require resurfacing. Jennings avenue was one of these. This street was paved in 1890 with small brick, probably Porter, laid on a sand foundation with sand joints. In spite of the inferior construction, this street held out until 1908, when it was replaced with a five-inch brick laid on a concrete foundation. The other street was Detroit avenue, laid by the village government in territory since annexed to the city. This street was paved originally in 1889 with the same general construction as Jennings avenue. It also was repaved with five-inch brick on concrete in 1908.

Regarding the cost of maintenance few details are readily accessible, but sufficient to bring out prominently the fact that the cost of maintaining the pavements in Cleveland is very low. In 1909 the Superintendent of Streets, who has charge of all repair work, spent \$118,400 on paved streets. Of this sum \$59,747 was recovered from plumbers and others who made openings in the streets, for which work they are charged cost plus 15 per cent. The balance, \$58,653, is the total expenditure for maintaining about 7,000,000 square yards of pavements of all kinds. As the

percentage of brick so greatly exceeds that of all others and the cost per square yard is so low, the error is not great in prorating this cost over the whole yardage and assuming the figure obtained to be the cost of maintaining brick. This amounts to less than 1 cent per square

built dividing the roadbed approximately into squares, and these are filled with water. The water is usually turned on at night and by the following morning will have all disappeared. If there were any old trenches in the street not well settled they will be shown by depressions. The dams



Brick Roadway—The Ideal One for All Practical Purposes.

yard. It may be true that the maintenance ought to be more and an allowance made for renewals. But the same argument holds true of other pavements in other cities; as, in New York, for instance, where 15 cents per square yard is spent for maintaining pavements, and even that sum is not sufficient. It is true also in Washington, where a charge of from 5 to 10 cents per square yard does not keep the streets up to a uniform standard of excellence. However, a just comparison would require a consideration of the relative traffic on the streets of the several cities.

are then leveled, the depressions filled and the surface shaped and rolled in the usual way. A bed of ballast eight inches thick is laid on streets where the natural soil is not of sand. This has been the most general method of construction since five-inch brick were used. These brick, cemented with grout, perform practically the same service as a bed of the same thickness of concrete. Of course, it is not claimed that this monolithic surface of five inches is as strong as a surface of four inches of brick and a layer of four inches of concrete besides. But the experience



The Farmer's Delight—Brick Paved Road Near Hoopston, Ill.

Methods of constructing brick pavements in Cleveland have been influenced by the peculiar soil that is found in certain parts of the city, mostly the old part, where, in the vicinity of the lake front and of old stream beds, in ages past a fine sandy material has been deposited. The method of preparing the foundation is peculiar to Cleveland. After the rough dirt has been excavated, dams are

with this construction in ordinary streets has been eminently satisfactory.

Where concrete is used as a foundation, it may be four inches thick, or, if the street is very heavily traveled or has car tracks, it may be six inches thick. Portland cement only is used. The mixture is one part of cement, three of sand and six of broken stone. In the case of hand mix-

ing, the mortar is made before stone is added. The large contractors, as a rule, use concrete mixers. A cushion coat of sand two inches thick is laid over the concrete.

The paving brick which are allowed to be used are described in the specifications as "the best quality of sound, hard-burned, vitrified, machine-pressed paving brick, made and burned expressly for street paving purposes." The surface dimensions are 3 by 8½ inches and the depth 5 or 4 inches. The usual indentations are made at the ends of the brick and quarter-inch projections on one side, one near each corner, for the purpose of keeping them apart. Brick with square rather than rounded edges are used. Any brick when subjected to the standard rattler test of the National Paving Brick Manufacturers' Association for one hour must lose not more than 20 per cent in weight. Bricks equivalent to 8 per cent of the volume of the rat-

rolled. Care is used throughout to avoid chipping. The contractors, as a rule, use tongs and conveyors in handling the bricks, both from cars to wagons and from the piles alongside of the street to the work. The conveyor most used is simply a frame carrying roller whose axles have roller bearings. Another type of conveyor used, an invention of a Cleveland foreman, is a triangular framework, two of the sides being approximately level, one of which carries a trolley by which the tongs with a load of brick is carried to the point of delivery by gravity, and the other leg carrying the empty tongs back.

The final process of paving is the grout filling of the joints. This is made one part Portland cement and one part of sharp lake sand. The sand and cement are mixed dry first and after the water has been added is kept in agitation constantly. The grout is swept into the joints.



A Typical Brick Paved Residence Street in Cleveland.—A Street That is Sanitary Because it Does not Originate Dust and is Kept Clean by the Rain.

tlar (which is 12,300 cubic inches) are put in the machine with a shot charge of 75 pounds of 2¼ by 2½ by 4½-inch cast iron blocks and 225 pounds of 1½-inch cast iron cubes. The amount of water absorbed in a 48-hour test after 24 hours' baking must not exceed 4 per cent. In a city like Cleveland, where brick have been laid for so many years and the engineering force has been permanent, being unaffected by changes of administration, there will naturally have grown up a corps of engineers and inspectors who are good judges of brick and can reject the poor ones at sight. Practically, they do this, but condemned brick are, of course, subject to test.

Before laying the brick, a board is laid alongside the curb and a row of brick laid lengthwise next to it. Before the rest of the roadway is grouted this board is removed and the joint filled with bituminous filler. The brick are laid in the customary straight courses (except at intersections, where they are laid at an angle), joints being broken four inches. The standard crown for a 30-foot street is six inches. After laying, the brick are rammed and

with brooms, each portion of the surface being gone over twice, and if necessary three times or more. Traffic is kept off the street for seven days.

Particular attention is paid to the details of construction, such as the application of the cement grout. On most of the pavements Cleveland uses the cement grout in preference to the bituminous filler, as they find the brick chipless at the edges, although a few streets have been filled with the latter.

Roads of Cuyahoga County.

Cuyahoga County, Ohio, is said to have more miles of permanent pavement than any other county in the United States, and, excepting counties that are included wholly within city limits, the statement is probably correct. However, the fact that the city of Cleveland, with its half million inhabitants and its high valuation, is located within the county is an important factor in bringing about this condition, for Cleveland paid 85.7 per cent of the county road tax in 1909. As the county extends over a territory 31 miles in length by 16 miles in width, many of the roads-

are of the usual character of county roads, and the methods adopted in improving them are similar to those used in hundreds of other counties.

Public work began on a large scale eight years ago, and in the season of 1909 the engineering department had under its supervision the construction of 165 miles of pavements, besides that of two large bridges and a number of smaller improvements. To manage all this work requires an organization of unusual size, and during the busy season the engineer's office employs as many as 100 men. The County Engineer is elected by the citizens, and he appoints two assistant engineers, one to have charge of bridges and the other of roads. During 1909 A. B. Lea, who has since been appointed Director of Public Service for the city of Cleveland, was County Engineer. Assistant engineers, draughtsmen and experienced inspectors are

part of city dwellers desiring to escape the evils of congested population.

The presence of a trolley line alone is not sufficient to induce town dwellers to move to the country, but they demand paved streets as well. County Commissioner Fisher says that the improvement of Bedford road, increased the value of property from 50 to 75 per cent. The improvement of North Ridge road, according to the same authority, increased the value of adjoining property fully 100 per cent.

The natural soil of Cuyahoga County is clay of such a sticky nature that before the recent improvements the city was practically cut off from the country in wet weather. There were, it is true, some 40 miles of plank roads which alleviated conditions to a limited extent, and an attempt at road improvement had been made by macadamizing,



Method Used in Constructing the Famous Brick Speedway, at Indianapolis, Ind.

also included in the force. Daily reports are made by the inspectors and mailed to the engineer's office. All records are filed in accordance with an excellent system in charge of special filing clerks.

The system adopted for carrying out the plans of permanent paving contemplates, first, the paving of the main thoroughfares leading out of the city, and afterwards the crossroads, thus forming a network of roads spreading over the whole county. This method best meets the needs of the two classes of citizens who use the roads—those who carry farm products to the city and those who travel from the city to their suburban homes or for pleasure. The benefits derived from the improvements also are two-fold, and they are not imaginary, but are very practical matters well recognized by citizens generally. The farmer or market gardener, not hampered by the former difficulty of getting to market over bad roads in wet weather, can choose his own time for carrying his produce to the city. This has a tendency to equalize prices in the city market, as the supply is made to meet the demand. The other marked advantage is the enhancement in real estate values, particularly in the demand created for house lots on the

the clay foundation being rolled, a six-inch layer of $2\frac{1}{2}$ -inch broken stone being laid first, covered with finer stone to a depth of four inches, and finally screenings being sprinkled over the surface to fill the voids. These roads were failures, because the stone used was not of good quality for roadmaking, questions of drainage had not been given proper attention and maintenance was neglected.

Thirteen years ago the county decided to experiment with brick and two roads were built of a width of only eight feet; as they were built without proper drainage and without proper inspection during construction, these roads were not as successful as it was anticipated that they would be. They have been repaired recently and are now serviceable, although too narrow. Six years ago bitulithic was tried, but, probably from the lack of proper drainage, it has broken up to some extent.

The class of paving that is now being laid in Cuyahoga County, brick on concrete, is laid in accordance with the provisions of the Dodge law, which requires that the owners of a majority of the frontage on the proposed improvement petition for the grading, draining and im-

proving of the road. The selection of the kind of paving is left to the decision of the County Commissioners. Included in the petition is a waiver of damages which the property owners are requested to sign, releasing the county from any damages arising in any manner from the improvement. Following this petition the County Engineer makes plans and estimates of the cost and the commissioners make the assessment, which takes into consideration frontage, depth of property, character of soil and distance from the city of Cleveland. Usually it amounts to 25 per cent of the total cost. The assessment and the advertisement for bids are usually published at the same time. The contract cannot be awarded until the assessment has been certified to the County Auditor for collection and 10 per cent of the amount—about $2\frac{1}{2}$ per cent of the contract price—has been paid into the county treasury. The County Commissioners are allowed to issue bonds to the amount of 1 per cent of the tax duplicate, which gives it a fund of \$3,000,000 to carry on work. Special legislation was obtained to facilitate the maintenance

burned and thoroughly vitrified. Brick kiln-marked to a height or a depth of over 3-16 inch are rejected. Rounded corners, the radius of which is from one-eighth to one-quarter of an inch, are required. Brick must have not less than four nor more than six lugs or projections on one or both sides of the brick the area of each lug to be not more than one-half of one square inch, so that when laid there shall be a separation of at least one-eighth inch and not more than one-fourth inch. Imprints of the name of the maker must be by recessed letters. The ends of the brick must have a semi-circular groove so located that when the brick are laid together the grooves will match. The size of the bricks shall not be less than $3\frac{1}{4}$ by 4 by $8\frac{1}{2}$ nor more than $3\frac{1}{2}$ by 4 by 9 inches. Any brick that lose over 20 per cent in the rattle standard test, or increase more than 4 per cent after immersion in water for 48 hours, are rejected. On grades of 5 per cent or over a special form of brick suitable for steep grades is used.

Standard practice is followed in all matters of construc-



Popular Type of Construction for Brick Paved Country Roads, Showing Dirt Road at the Side of the Pavement.

of roads, and competitive bids are received for materials and labor employed directly in repairs.

Work carried on under these laws consists generally of a roadway 30 feet wide between ditches. A curb is set four or five feet from one of the ditches. A brick pavement four inches thick on a four-inch concrete base is laid for a width of fourteen feet. This leaves a dirt road of eleven or twelve feet between the inner curb and the second ditch. The dirt roadway is much used by farmers in dry weather, as under those conditions they prefer it to the hard brick road.

Either sandstone or concrete curbing is used. The concrete curbing is six inches wide at the top, twelve at the base and fifteen deep. The sandstone curbing is four or five inches wide and fifteen inches deep.

The specifications require that the brick used in the roadway shall be free from marked warping or distortion and uniform in size, so as to fit closely together and make a smooth pavement. They must be homogeneous in texture and free from laminations and seams, evenly

tion just as strictly as in laying city pavements. The subgrade is rolled with a steam roller. The concrete base, 4 inches thick, is composed of one part Portland cement, $2\frac{1}{2}$ parts of sand and 5 parts of broken slag or stone of a $1\frac{1}{2}$ -inch size. If mixing is done by hand the cement and sand are mixed dry before the aggregate is added. On the concrete a two-inch cushion of sand is laid and shaped by a template. Brick are laid at right angles to the curb lines, except at intersections. Longitudinal joints are broken by a lap of half a length of the brick. End joints are made close by the use of a steel bar applied to the ends next the curb. Every fourth course of brick must be straightened in a manner satisfactory to the engineer. After a sufficient number of brick are laid the pavement is sprinkled with water and soft or misshapen brick are removed. After rolling, the brick are again inspected and any necessary replacements made. Grout is then applied in two coats to fill the joints to the top, but to insure that they are absolutely flush another sweeping of cement is required before the second has secured its initial set.

THE CLASSIFICATION AND MANUFACTURE OF PAVING BRICK

By Ellis Lovejoy, E. M.

Municipalities are awakening to the fact that the cities making systematic tests of the materials going into the streets are getting the cream of the material while those not making such tests are getting the inferior product from the kilns, perhaps at times getting the brick rejected by the first mentioned cities.

Brickmakers are human, and it is only natural to instruct the foreman of the yard, that the top overburned brick and all brick below the tenth or sixth course, let us say, in the kiln, must be kept out of the cars for A, but B likes the overburned brick because they look hard, and C will take anything. It would be a safe bet that A gets the best street, and C gets the culls.

Every city, town or village should test the materials going into the streets and should hold the manufacturers to the specifications. This would be a good thing for both the municipalities and the brickmakers although the latter may think differently at the present moment.

Classification According to Service.

There should, however, be a graded classification of paving brick, according to the service required of them. A business thoroughfare should be paved with only first class product, and the tests of the material should be severe. The same city should admit a second class and even a third class product for residence and suburban streets not omitting the tests to keep the material within the proper range. A rattler loss of 18% for the business district, of 21% or 22% for outlying streets, and 25% or more for the residence streets that are not thoroughfares, will give the cities just as good streets as they are now getting and at less cost.

City pavements can easily be mapped out on the "One Hoss Shay" principle and should be. Manufacturers of high grade brick then could sort the product to keep well within the most severe requirements, whereas now they must work very close to the danger line and take many chances.

The life of a pavement is determined by the poorest brick, and under a proper classification the streets would have longer life. There are many factories which cannot get into the first class with a satisfactory percentage of their product, and they are often compelled to seek a more distant market, where the material is not tested. Under a proper classification such plants would find a larger home market. Long distance business is expensive, in more ways than one, to the manufacturer. The volume of business would be the same but there would be a re-alignment of the markets. A home market nets the manufacturer more than a foreign one, and he would profit by a classification which would let him into a nearer market. He must divide his increased profits with the consumer and in addition to this, the latter saves transportation charges.

Thus, each profits by the classification and the latter gets a pavement of equal life to the present one in front of his residence and a pavement of longer life in front of his business property.

Making a Market.

County and state roads, especially the latter, should not only use the lower grade brick but the specifications should be so worded that the near-by factories can find a market for their product.

We would not wish to encourage slipshod work, and believe that a proper classification would tend to improve the average product on the market. We would make a limit and any factory which could not get within this limit would have to go out of business. There are numerous factories whose existence depends upon markets where no tests are made, and oftentimes under-hand methods enter into the transaction. Many of these factories are not making the product they should, and such would have to improve their product. Others have not the proper material and should be classed out to the betterment of the paving brick product and of the business in general. So much for the market end of the business.

In the factory end, it is remarkable how many manufacturers fail to get the product they should, and it is also remarkable in how many instances, a stranger can go into a factory and point out faults in the manufacture which when corrected result in a better product. The manufacturer probably has broader knowledge of the peculiarities of the clay or shale and of the business in general, but his very nearness to them makes him blind to the faults in his treatment.

Faults in Material.

The shale may be hard and too granular to pack well in passing the die, and the difficulty is in a measure overcome by hard burning, but we know that in many instances the hard-burned product is not so tough as a lighter-burned material. In such a case the manufacturer is trying to overcome one fault with another, but the fact that two negatives make an affirmative does not apply in the manufacture of paving brick. Such harsh material should have a softer material mixed with it to serve as a matrix, or perhaps it should be ground finer and more thoroughly pugged.

On the other hand, the material may be so fine that the density is too great, and even when properly burned the product is in effect the same as an overburned product. Here, we should have perhaps coarser grinding, or even the addition of "grog" of some kind. We have seen impossible paving brick material made into fair paving brick by the addition of proper "grog." In the early days of the business, the favorite product was a mixture of fire clay and shale or common clay, on the principle that the fire clay gave the skeleton for strength and the common clay gave the vitrification and necessary qualities for hardness. We still use such mixtures, and theoretically the principle is correct, but in many instances we find the proper combination in one material. When not so found we must create it artificially.

Faults in Manufacture.

The fault may be in the auger, in the die, in the lubrication or too much lamination.

Even the cutter has been found to be the weak feature. At every revolution, there was a strain on the bar over a section equal to several brick, perhaps a half dozen, equal to 10% to 30% of the product, and these when burned and tested raised the rattler loss just enough to outclass the product.

The trouble may have been in the drying. It may have been too fast or even too slow. The strains in drying are very severe. Perhaps on every car will be

found two or three brick broken in two. It is difficult to understand how a brick can dry, and shrink as it seemingly must, on the outside without cracking. Consider for a moment the strain that the outer drying shell must be under, during some stage of the drying. Some clays take weeks to dry safely and some can be dried in a few hours on a hot plate. Whenever we approach the limit of safe drying, we are certain to introduce drying strains. Broken brick from the dryer show that the strains have ruptured some brick, and may be taken as some evidence that the structure of all the brick has in some degree been disrupted.

The burning is frequently the weak point in the manufacture. Sulphur often causes trouble, especially if brick are set wet, or the kiln bottom is on wet ground. In continuous kilns, where the sulphur gases pass over the green brick, the brick become swollen, and in down draft kilns we frequently find rotten brick due to sulphur. The color imparted through the influence of sulphur is a peculiar faint reddish brown, more of an effect than a color, but unmistakable when one once becomes familiar with it. Occasionally we find that the weakness ascribed to overburning is due to sulphur, and once the trouble is overcome, the top and bag brick are among the best in the kiln.

Too rapid watersmoking, too rapid oxidation, too rapid burning, too rapid cooling, too strongly reducing conditions, draft too weak, irregular advance in the burning. —these and other things may cause deterioration of the product in the burning.

With all the chances for error in the course of the ware through the factory, the wonder is not that we get low grade stuff but rather that we get so much high grade. We marvel at the patience of clay under the abuse it gets.

MUNICIPAL ADVERTISING IN ALTON, ILL.

The Alton, Ill. Board of Trade believes in the modern method of publicity as is evidenced by the fact that recently through its efforts the "Alton Daily Times" issued a 24-page paper, called the "Board of Trade Issue," devoted to setting forth the advantages of the city of Alton.

Mr. Eben Rodgers, one of the most prominent men in the paving brick industry, is the president of the Alton Board of Trade and was a leader in the publicity plan. A portrait of Mr. Rodgers appears on the first page of the issue and an attractive half-page ad of the Alton Brick Co. appears on another page, which shows that unlike many others, Mr. Rodgers "practices what he preaches," and is not afraid to put his theories into practice. In the ad appeared a number of views of brick paved country roads and extracts from a paper read by Andrew B. Lea, county engineer of Cuyahoga county, O., before the Cleveland Engineering Society, as follows:

In Cuyahoga County, Ohio, where I have had experience in the construction of several hundred miles of pavement of different types, I found that the ideal pavement for country roads was brick.

Brick is the cheapest and best pavement that can be used, all things considered except noise, and as the homes in the outlying districts are generally back some distance from the highway, noise ceases to be an objection.

A vitrified brick roadway is so easy to construct properly that there need be no longer any hazard or risk in choosing it. It can be made to meet any demand of the user and every class of traffic. Its merits enumerated, read:

It is impervious. It is the most sanitary. It is smooth, but not slippery. It originates no dust. It is equally adapted to heavy and light traffic. It does not require traffic lightened by

legislation. It is nowise affected by climatic influences. It is economical in use, as well as maintenance. Its traction resistance is without objection. It is equally satisfactory at all seasons.

It can be built in any form, in any manner, to suit the conditions of use and traffic. Over the hills, upon the level plain, or through the swamp. It can be left in its own dirt and filth without injuring it, or it can be swept as clean as a parlor floor.

In making mention of Alton's clay products, the following statements appeared in the special edition:

"The brick Alton produces is of a very handsome red, capable of fine finish. We build our finest residences and business structures and our streets are paved with it. Many beds of brick clay, equal to the New Jersey quality, are found in Upper Alton.



Mr. Eben Rodgers, President of the Alton Board of Trade, and Third Vice-President of the N. P. B. M. A.

"The Alton Brick Co. makes brick out of dirt, but the value of its entire output does not mount up into the millions on this account.

"The Stoneware Pipe Co. of East Alton is another important factory which manufactures pipe and tiling, etc., from clay. There is so much clay in the country that it is of comparatively little value but the value of the manufactured product would surprise you if we were at liberty to give it out."

IMPORTANT B. B. A. MEETING.

A very important meeting of the directors of the Building Brick Association of America will be held in the Flat Iron Building, New York City, Monday, Sept. 18, and at the date of going to press, a large attendance of the directors is expected. Matters of great import are to be considered.

BESSEMER BRICK

Throughout the world, Bessemer steel is famous for its strength and merit and the paving brick of the same name has come to occupy equal prominence in the world of street and road building. Throughout the Middle West and as far east as Philadelphia, Pa., Bessemer paving brick are well known and popular. These brick are made by the Bessemer Limestone Co., at Youngstown, O., and their two plants are among the largest and best equipped in the country.

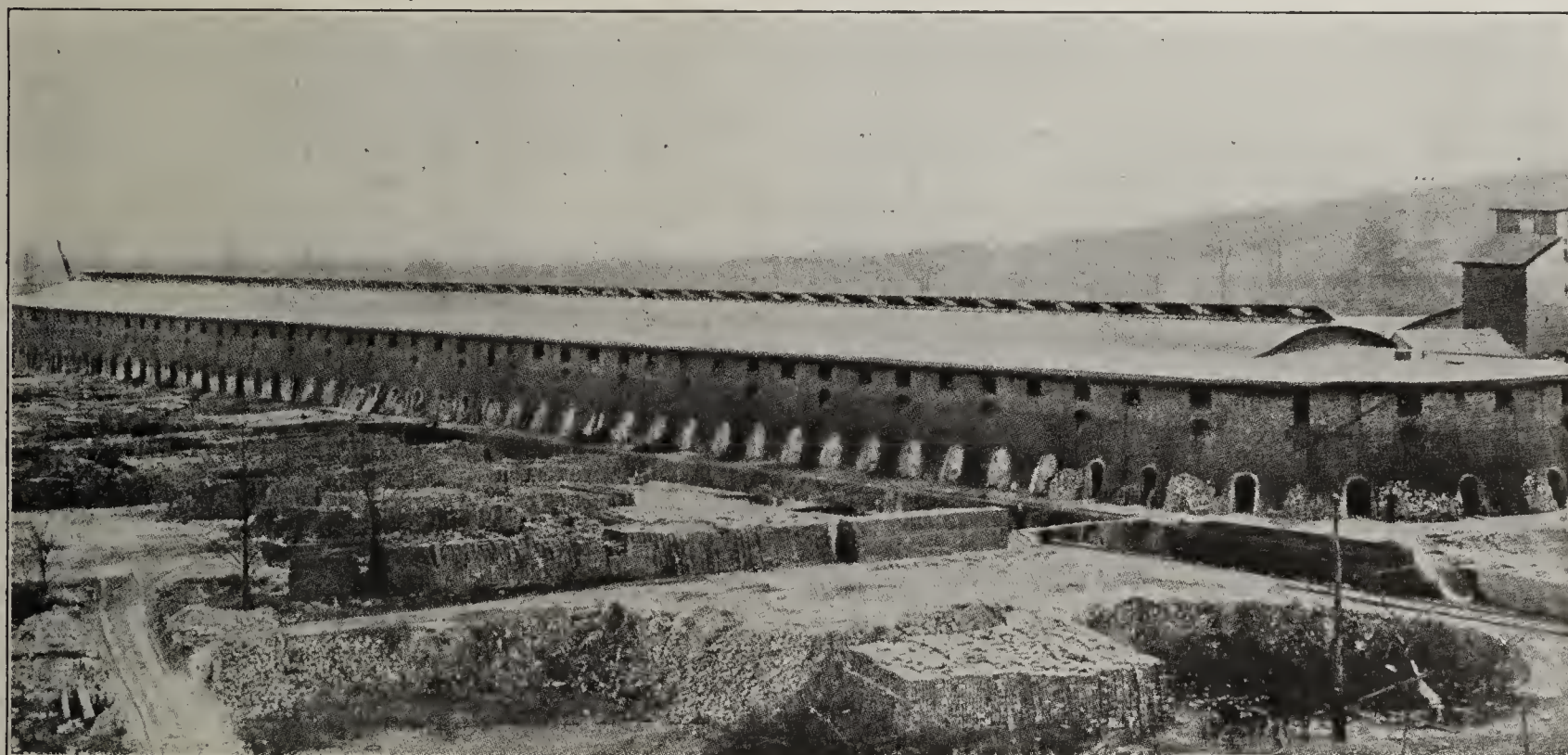
The Bessemer Limestone Co. was originally established in 1888 as a limestone proposition and it was only in 1901, that the making of paving brick was undertaken and a plant built for the purpose. The second plant was built in 1907.

Both plants are in operation the entire year, employing about 600 men and while the output is largely 10-pound paving block, yet a considerable quantity of vitrified building brick is also made. Mr. John Todd is president

Throughout the plant, Bonnot machinery equipment is used almost exclusively. Two Bonnot 4-ft. dry pans grind the shale which then passes through a piano wire screen and from thence is carried to a 12-ft. horizontal Bonnot pug mill for tempering.

At every plant is a Bonnot auger machine of large capacity with automatic side-cut tables and necessary off bearing belt. At No. 1 plant are four represses and at No. 2 plant fire represses.

The waste heat drying systems used at the Bessemer plants are a monument to the skill of L. E. Rodgers of the Rodgers Engineering Co. and have proven very successful and satisfactory. The construction is according to the well known Rodgers' waste heat system by which the heat from the cooling kiln is utilized for the drying of the brick by means of ducts and fans. The dryers have brick walls and concrete roofs. The cars used in the dryers were furnished by the Ohio Ceramic Engineering Co. of Cleveland,



This High Continuous Kiln at the Plant of Bessemer Limestone Co., at Youngstown, O., Holds Many Pavers and is Said to Be the Largest Kiln in the World.

of the company, C. C. Blair secretary and general manager and John R. Rowland, treasurer, and F. R. Kauengesir, superintendent. The company owns 800 acres of valuable land, on which is found, in unlimited quantities, a superior grade of hard blue shale, which is the material used in making the Bessemer brick. The shale quarries are located between the two plants of the company.

The buildings of plant No. 1 cover an area 780 ft. in length by 400 ft. in width while the buildings of plant No. 2 cover an area of 1,000 ft. in length by 400 ft. in width. All the buildings are of frame and brick construction, brick being used exclusively wherever possible.

The shale mining equipment at these plants is remarkably complete and effective. The shale is gotten out with Marion steam shovels and loaded on to steel dump cars which are hauled to the plants by locomotive. This company, as would be indicated by its name, is also in the limestone business, it having valuable deposits of lime underlying the strata of shale.

Considerable of the shale, after mining, is dumped at the two plants for storage, store sheds being provided, each 300x66 ft. in dimensions.

O., 450 of these are provided for plant No. 1 and 625 for plant No. 2. They have a capacity of 500 brick each. The dryers are also equipped with double track transfers and an electric transfer. The dryer at plant No. 1 is 120 x 90 ft. and contains 19 tracks with a capacity of 340 cars. The dryer at plant No. 2 is 103 x 117 ft. in size and has 28 tracks with a capacity of 392 cars. Each dryer requires two blade reel fans, one for the feeder end and one for the exhaust end. Forty-eight hours are required for the drying process.

The Bessemer Limestone Co. has made a great success of the Haigh continuous kiln with which plant No. 2 is provided. This kiln has been described previously and an illustration is shown herewith. At plant No. 1, eleven down-draft kilns take care of the output. It has been found that burning at this plant requires about 2,000 lbs. of slack coal for each thousand of 10-lb. block.

The power equipment at the Bessemer plant is up to the usual standard. At plant No. 1, is a Buckeye piston valve engine of 250-h. p. and at No. 2 is a Corliss engine of 500-h. p. furnished by the Allis-Chalmers Co. At plant No. 1 is an Erie horizontal tubular boiler and at plant No. 2 a Sterling water tube boiler, of capacity to correspond with the engines.

SUCCESS ASSURED.

A marked degree of interest and enthusiasm in the coming Clay Show is being manifested by the clay manufacturers throughout the country. Sufficient reservations have already been made to make the show an assured success.

The Clay Show headquarters, at 816 Chamber of Commerce Building, Chicago, is a busy place and is fast taking on the appearance of a land office doing a rushing business. Secretary Hopley is kept busy answering the numerous inquiries which pour in daily from all parts of the country. An encouraging number of reservations have been booked, and as the clayworkers seldom do things by halves, there is little doubt that the exhibits will be of an unusually attractive and substantial character.

It is a well known fact that the sale and popularity of various competitive materials have been greatly enhanced by annual shows held at the Coliseum, but as they are virtually an old story and worn threadbare, it is safe to conclude that people will take to a show with new features and that the attendance will be largely made up of those contemplating the erection of homes and business buildings.

"It Is Your Show," the well-known slogan adopted by the show management, is a very appropriate and fitting one. This means that the show will not be a success unless you lend your assistance liberally, both in time and money, and if by any chance it should not be a success (but it will) it might be because you withheld your assistance and encouragement.

The sole aim of the enterprise is to strengthen the standing of clay products with the public. Competitive material has been so actively promoted and advertised that the public has naturally accepted it as a substitute, notwithstanding the fact that it is much inferior to clay, so that the clay manufacturer must do his part to set the matter right before the public. Give Mr. Hopley the encouragement of your advice and assistance. He is doing all any one man can do. He needs your help.

AN INQUIRY AND THE ANSWER.

Mr. R. G. Eisenhart, Horseheads, N. Y., is one of the most prominent clayworkers in the country and well known throughout the trade. He recently wrote to another prominent clayworking concern, V. Cushwa & Sons, who operate plants at Hagerstown and Williamsport, Md., asking them regarding the particular merits of the Martinsburg brick wagon. The reply of Cushwa & Sons speaks for itself, and is one of the strongest testimonials which could be offered regarding the value of this particular wagon for the special use of brick manufacturers and dealers. We take pleasure in publishing same below:

Hagerstown, Md., August 23rd, 1911.

Mr. R. G. Eisenhart, Gen. Manager, Horseheads, New York:

Dear Sir:—Your letter addressed to our Williamsport House has been referred to us.

We have been using the Twentieth Century Dump Wagons made by the Auburn Wagon Works, Martinsburg, for several years.

We dump brick on the hard brick street pavements here with these dump wagons, with much less injury to the brick than with bottom dump or carts. The Twentieth Century Wagon lays them down squarely; there is very little tumbling. Our drivers like to use them and the contractors would rather receive their goods delivered with them. We dump cement in cloth sacks without bursting them. In fact, we haul sand, coal and everything else in them. They are heavy, you can hardly break them down, being short coupled, run lighter than many wagons we have had with less capacity. They are the "ideal" Wagon for our purpose. Yours very truly,

V. CUSHWA & SONS.

SPOILING A GOOD STORY.

A letter from Terry Bros. Co., one of the leading manufacturers of common brick in the great Hudson River district, spoils that most excellent story contained in an article recently published in "Brick and Clay Record" regarding the test work being done by the Ceramic Department of Alfred University. Mr. Jay Terry, the writer of the letter, tells that the story is not true; that the burner had not been drinking, and that he did not reform because he saw his brick floating on the water. Mr. Terry also declares that cases mentioned in the article are only isolated ones and that the writer of the article evidently does not understand how such cases may occur. We quote from Mr. Terry's letter, as follows:

"The brick, shown in the two illustrations, may have come from one of our kilns, but if they did they were absolutely isolated cases. That is, there was only brick like that shown on page 169 and very few, if any, like that shown on page 168, floating in the bowl.

"The one on page 169 I have personal and definite knowledge of, but of the other I have no definite knowledge, though a few of them are liable to be made on any yard by a poor burner or by a good one, if the output is large enough.

"The fact is the brick are mere isolated freaks, the oddities from an output of years and hundreds of millions of brick.

"In regard to the burners, they have been total abstainers, so we are sure it was not the result of imbibing."

TWENTY YEARS OF ACTIVE SERVICE.

Mr. R. D. Culver, widely known throughout the clay industry for the past decade, as president of the Wabash Clay Co., at Veedersburg, Ind., has resigned as president and general manager of the company. He will be succeeded in the former position by Mr. C. C. Orthwein, while Mr. W. P. Whitney—who has held responsible positions with the company for 14 years—assumes the management, at the same time retaining his position as manager of the Danville (Ill.) Brick Co.'s plant. Mr. Culver will remain a director of the company, and his brother, L. A. Culver, will continue as secretary and treasurer.

In a letter sent out to his friends, Mr. Culver makes the following comments:

In laying aside the duties—which, for only a few months short of 20 years, I have performed to the best of my ability—I am conscious of somewhat mingled feelings. I am glad to be free, for awhile at least, from responsibility. At the same time, I am conscious of a sense of deep regret over severing connections which have brought me many pleasant experiences and made me hundreds of good friends, but, so far as I know, not a single enemy. I take particular satisfaction in the thought that during the entire 20 years of my administration, commencing with the promotion and organization of this company, not once have we been in court as plaintiff or defendant in a suit at law. When it is recalled that we have executed hundreds of contracts with all kinds of men and running into millions of dollars, it will be conceded that this is an unusual record. Almost equally happy have been our relations with our employees. We have had but one strike in our history; it was of comparatively short duration and was not marked by bitterness on either side. I have always, as manager, tried to remember that I had a duty to perform toward our men, as well as toward our stockholders, and these duties have never clashed. I hold that a well paid, well cared for and, therefore, contented set of employees is the pre-requisite of a really prosperous business.

To those of my friends, who are curious as to my future, I will say that I have no thought of retiring permanently from active business. I am still a young man—considerably younger than either of those very much alive lads, Teddy R. and W. J. B.—, so no shelf or easy chair for me. I shall rest for a little while—perhaps take my wife on the wedding trip I promised her twenty odd years ago, but deferred for lack of suitable opportunity. Then, somewhere, I shall get back into harness, nt my shoulders to the collar and pull my part of the common load. What line of activity I shall choose, I do not know; it may be the old; it may be something entirely new.

CITY WELFARE

Not since the days of the World's Fair has there been in Chicago an exposition of such far-reaching import in the matter of municipal government and building as is the World Conference and Exhibition for the development of twentieth century ideals of municipal economy, to be held Sept. 18-30. Every city of Europe and of the United States where a notable civic improvement has been made is sending to the congress representation of its achievement, either by personal representation or by exhibits. The Congress, which will be held in the Coliseum, the First Regiment Armory and the adjoining plaza, September 18-30, 1911, will be a show place and a market place for every article of material, machinery and equipment that enters into the construction and operation of a modern city.

It is expected that a large number of the paving brick manufacturers and paving brick contractors will be in attendance at the congress, and especially at the Saturday session, devoted to paving. This certainly offers a great opportunity for the paving brick men to show to those most interested in the subject, the superiority of brick as a street surfacing material. The municipal engineers and city authorities will be gathered in Chicago at this congress and the paving brick men will do well to make the strongest kind of showing to promote their interests.

In this connection, it might be well to call the attention of the paving brick men to the splendid opportunity which is offered them for educating the public and the authorities regarding the merits of brick paving through the National Clay Show, which will be held in the Coliseum in Chicago next March. Plans are being made to bring out a showing of municipal work which will bring to Chicago during that time the municipal engineers, mayors, paving contractors and others, whom it is desirable to interest in modern methods of brick paving. No better opportunity could be offered for promoting brick interests than this. It is proposed to devote the entire Coliseum annex to exhibits of municipal work, street paving, sewer pipe, conduit, etc., and the paving brick men will profit greatly by this effort of the show management to further their interests. The exhibit of paving brick can be made so important that it will attract nation wide attention and receive a large amount of publicity through the newspapers, the general result being practical education of the public throughout the country regarding brick paving.

The First in the World.

The congress is distinctively Chicago's, in being an undertaking of the Chicago Association of Commerce, which has been planning and promoting the affair for over two years. The congress is practically the first of its kind in the world. Berlin had one some years ago where the attendance was general, but where the exhibits were nearly a minus quantity. The Chicago Association of Commerce, however, has projected the exposition on a scale as vast in general scope as it is careful in detail. Every modern improvement valuable to the progress of a city will be shown. Every modern idea inspiring to the ideals of a city will be promulgated and explained. In the belief that cities may be educated, physically and morally, trained ethically and taught attractiveness as well in the aggregate as in the individual, the association has brought about this general meeting for the interchange of ideas and ideals.

It is quite fitting and proper that the question of "City

Paving and Care of Streets" should be given an important place on the program at this Municipal Exposition, Saturday, September 23rd, being the day set apart to discuss methods of paving in various cities. The following divisions of the subject have been made, but so far no definite program has been announced:

Paving and Care of Streets.

Street paving. Material and manner of construction.

Paving repairs and municipal asphalt plant.

Street cleaning, showing modern equipment and organization best adapted.

Street lighting, artistic modern methods adapted to cities and towns.

Roadmaking.

Macadam and bituminous macadam.

Oiled roads and methods for caring for natural surface roadways.

Improved machinery for modern roadmaking.

The cities of St. Paul and Kansas City will show their plan of municipally operated road-building machinery, and we trust "brick" will have able representatives present to uphold the banner of our best known paving material.

It is just these opportunities when the public is agitating civic improvements, which should be grasped by paving brick manufacturers to push their interests and impress upon the public the merits of vitrified brick pavements.

BRICK PAVING IN CHICAGO.

In view of the splendid exhibits of brick street paving in many cities of the country, and the test of years which has proved the superiority of brick for both light and heavy traffic, it is strange that an enterprising city, such as Chicago has the reputation of being, should be so laggard in adopting this best of all street surfacing material.

While there are today 4,355 miles of streets and alleys in the city of Chicago, of which 1,730 miles have been paved, yet only 147 miles of these streets and alleys are paved with brick as against 530 miles paved with asphalt, 574 with macadam and 349 miles with cedar blocks.

Of present work on hand of unfinished contracts for paving to be completed this year, there are 29 miles to be paved with asphalt, 16 miles with brick, 8 miles with macadam, 7 miles with creosote block and 7 miles with granite block. It can thus be seen that a considerable quantity of paving brick will be used in Chicago during the balance of the year.

All street improvements in Chicago are initiated, authorized and supervised by the Board of Local Improvements, members of which have heretofore attended some of the sessions of the National Paving Brick Manufacturers Association. The chief engineer of this board is Mr. John B. Hittell.

Bad street construction has in the past, done more or less injury to brick paving interests in Chicago. Those who are familiar with the subject, know that a brick surfaced street can be very unsatisfactory indeed, unless the construction of that street is according to the best standards. A bad example of brick street can work very serious injury to the brick cause while, in fact, the brick itself or the system of brick paving may be in no way at fault. The many streets, in other cities which have withstood heavy traffic for long periods of time, are sufficient proof that Chicago would find it to her advantage to adopt this best of all street paving material.

A NATIONAL BRICK ROAD

Nation-Wide Agitation on the Construction of a Magnificent Highway from St. Louis to Washington, to be Constructed of Brick, the Coming Paving Material for Our Great Highways

A movement is on foot which, if brought to success, will mean the beginning of a revolutionary movement in good roads construction. The practical and successful demonstration of the use of paving block as a road surfacing for country highways made in Ohio, Pennsylvania, New York and other states, is bearing fruit in the better knowledge of the comparative value of surfacing material and there is no question but that brick will eventually come into its own and that the people of the country will learn that the new highway conditions, involved in the stupendous use of motor vehicles have made brick the only feasible material for road surfacing.

The movement now under consideration is for the construction of a magnificent national highway from Washington to St. Louis, to be constructed under standard specifications and surfaced with the world's best and greatest paving material—burned clay. There is no doubt but what if sufficient energy and perseverance is manifested, that this plan can be successfully realized.

Constant agitation brings results. No great movement has ever been planned and brought to a successful issue without much agitation, both by word of mouth and by the press.

Just now the "Good Roads Movement" is occupying a prominent position among the questions before the public. This is largely due to the general use of the automobile by both city and country dwellers. Anyone who comes in tired and weary and in a generally-used-up condition from a twenty-mile spin over the average country roads, with their insidious holes and bumps, needs little exhorting to become an enthusiastic convert to the good roads movement.

After many years of experimenting with macadam, gravel and various other road surfacings, the general consensus of opinion is that brick surfacing for country roads, while a trifle more expensive to lay, is in the end the cheapest, as well as by far the most satisfactory to the general traveling public.

Almost every state throughout the country is conducting a good roads campaign, aside from the plans which are being made by the various cities and villages throughout the country.

There is a strong effort being made by citizens along the route of the great National Road, which reaches from Washington, D. C., to St. Louis, to have that historic thoroughfare paved.

Ohio and Indiana are especially active in this movement, and as there are many paving brick plants in those states, a strong effort is being made to bring about the use of brick for the paving of this road.

It is claimed that, as the brick are made at various points on or near the road, the freight bills would be such a negligible quantity as to make the brick paving almost as cheap as that of inferior materials. Certainly, when it comes to the discussion of the relative merits of brick and the ordinary unsatisfactory road materials in frequent use on country roads, there will be no dissenting voices as to the superior merits of the pre-eminently satisfactory brick paving.

While we are very much in favor of laying brick on a concrete base, it has been tried and proven in Indiana that a very satisfactory base may be made of river or

bank gravel, without cement, thereby effecting a very great reduction in cost. Very satisfactory curbing may also be made of burned clay, which may be used in sections of the country where stone is scarce.

The following plan has been worked out at Brazil, Ind., for the improvement of the section of the National Road, in Clay County, by the County, with the assistance of the United States Government:

The Government agrees to provide plans and profile of the road, the plans for material, and will furnish an expert road engineer of the department, paying his salary while there, to superintend the work and see that it is done well and along the line of the Government's plan. The application for the work must be signed by the proper county authorities, the County Commissioners, and the nature, extent, funds available, what road building machinery is available, what months could the



Type of Road Planned for the National Highway.

work be best done in, kinds of available material in the vicinity, whether an appropriation will be made for the maintenance of the road after it is built or not, are among the questions on the blanks.

The Government asks the county to furnish the material, labor and road machinery, while it will provide an expert engineer with its plans. Thus the county will receive, without expense, the benefit of the expert Government road man and the plans. The county will pay the hotel bills of the expert. The material will be decided on by the Government, but it is hoped that, owing to the quality of paving brick in the vicinity, that this material will be favored.

The plan of improving the National Road, making a model highway like those near Cleveland, is meeting popular favor. It is believed that Vigo County, on the west, and Putnam and Hendricks counties, on the east, will take up the matter and an ideal highway will be begun, which would no doubt be continued by other states, making the road complete from Washington, D. C., to St. Louis, Mo.

BRICK PAVEMENT SELECTED

Thorough Investigation by Committee Decides the Question in Favor of Brick for Paving Two and One-Half Miles of Country Roads

Harrisburg, Ill., has been studying the question of the best surfacing for country roads, and, as a result, bids have been let for brick to pave 2½ miles of road, 9 feet wide, on a concrete base, with concrete curb and cement filler, in Harrisburg Township.

The firm of Reeb Bros., of Belleville, Ill., being the best and lowest bidders, received the award, their figures for the job of 13,564 square yards being \$25,986.96, just \$97 less than the next bidder.

This decision, in favor of brick, was not the result of a sudden notion on the part of the Commissioners of Harrisburg Township, but was the result of investigations which have been carried on for some time.

Mr. C. D. Stillwell, an attorney at Harrisburg, a prime mover in the affair, tells in a letter to Mr. Albert Warren, of the Commonwealth Clay Co., of Streator, how it came about, which proves that these matters are of slow growth and the result of persistent effort by the friends of brick.

In his letter Mr. Stillwell says that the idea of brick-

The report of the trip of investigation was reported by Mr. Blackburn in such an able manner and contains so many good "talking points" for "brick" that we take pleasure in reprinting, it as follows:

Investigate Illinois Highways.

On Tuesday morning, July 29, 1911, in three automobiles, the Highway Commissioners of Harrisburg, Ill., and three representatives from their Commercial Club, together with their engineer, accompanied by the Supervisors of Paris Township, the president of the Citizens Bank, the vice-president of the Edgar County Bank of Paris, and Mr. J. W. Robb, of Clinton, Ind., on a trip of investigation of the highways of Edgar County and the Newman brick paved country road. We left Paris at an early hour, going over the gravel roads and the recently constructed stone road, giving the committee ample opportunity to compare the highway improvements made from gravel, stone and earth.

On reaching Newman we were accompanied by Mr. J. W. Roller, the contractor to whom all credit is due for the improvement of the Newman country road. This improvement was made under the "Hard Road Act," by extending a levy for five years on the assessable property of the township, and these improvements are very evidently limited only by the limitations as set forth by the Hard Road Law. They are very popular in that locality and will no doubt, be extended as soon as their



Heavy Loads May Now Be Easily Hauled on This Brick Road Near Newman, Ill., Where Formerly an Empty Wagon Would Sink.

paved country roads was first suggested to him by Mr. Warren, then representative of the N. P. B. M. A., some two years ago. The idea took root so deeply that, after gathering data on the subject, Mr. Stillwell became a thorough convert to the cause of brick paving.

Later, when he was appointed on the "hard roads" committee of the Commercial Club of Harrisburg to decide on the best method of spending the \$2,300 which had been levied for the construction of 21-1 miles of country road, Mr. Stillwell began immediately to advocate the paving of the road with brick. He says the idea came to the club as a thunderbolt from a clear sky, it being entirely new to the members, as far as local application is concerned. Upon consulting with Mr. Blair, the secretary of the National Paving Brick Association, a trip of investigation was planned for the committee and the Commissioners. This trip resulted in the party of seven coming back a unit in favor of brick roads.

Before the trip Mr. Blackburn, of Paris, Ill., gave an address before the Commercial Club at Harrisburg on the subject of "Brick Highways," which was well received.

limitations will permit. The first 1,500 feet of this road improvement is 15 feet in width; the remainder of the four miles is graded on one side. All of the Committee seemed to be fully convinced that a nine-foot brick road, with the earth road at the side, was a perfect success, and as expressed by many of them, was all that could be desired, offering no inconvenience in passing, as the brick road was constructed on the right hand side of the highway on approaching the city so that the heavy loads coming in to market would have the right to the improved portion of the highway. As this earth portion is never disturbed by continuous traffic it is very easily kept in repair and offers perfect conditions for passing.

We went over the entire portion of this improvement, carefully noting any objections that might be offered; but from every one it gained only expressions of approval. This portion of the trip was exceedingly satisfactory, and I anticipate will result in great good.

From Newman we went east, passing over what is known as the Chrisman stone road constructed a few years ago from crushed stone found in that locality, and found it to be in unsatisfactory condition as it was showing great evidence of wear and as expressed by one of the Commissioners, if not immediately repaired would be in no better condition than their mile of experimental road, constructed in Harrisburg Township by State aid and under the direction of the State Highway Engineer in 1909.

We came south over what is known as the "Chicago Road," which has been kept in repair by graveling for many years and was subject to repair every year. A portion of this road two years ago was excavated and ten inches of stone rolled in place

as an experimental stone road. This experimental portion was re-surfaced last year and on the day of our inspection was again re-surfaced, the stone being hauled from the south in wagons and dumped at the south end of the improvement, and then the repair extended to the north, the material used in repair being hauled over the portion repaired. At the time of our inspection about a half mile of stone was in place, the south half of which was already ground to a powder, all ready to be blown, washed or thrown from the roadway by the automobiles. This was recognized by all as one of the most reckless wastes of money that they had ever observed in highway construction.

I left Paris in company with the Harrisburg Committee on the evening train, arriving in Cleveland Wednesday morning. We went to the office of the secretary of the National Paving Brick Manufacturers, where we found Mr. Blair had arranged for two machines to take us over the brick highways of Cuyahoga county. We went over many miles of these beautiful highways and observed one in the process of construction.

This highway was being constructed fourteen feet in width with concrete curb placed at either side, made in triangular form fourteen inches in depth, twelve inches wide at the base, six inches wide at the grade line of the pavement. A four-inch concrete base was constructed, upon which was placed a two-inch cushion of crushed blue stone dust, which was rolled with a light roller twenty inches in diameter and twenty-four inches long, making a very firm, uniform cushion upon which the brick were laid. The brick were placed at one side of the roadway and conducted to the pavement on gravity carriers and there set on edge four brick high, with the lugs facing the direction of construction. With the brick thus placed it would be difficult to get the lugs any other than one way; thus, in my opinion, obviating the objection so often offered to the lugs on account of the difficulty in having them properly placed.

All parties concerned expressed themselves as highly gratified as to the results of the trip, and the Commissioners assured me that they would investigate proceedings for the construction of brick highways immediately upon their arrival home.

BRICK PAVEMENTS IN GRAND RAPIDS, MICH.

The city of Grand Rapids, Mich., for several years back has mainly used vitrified brick in surfacing its streets. In consequence the experience of that city affords some useful lessons concerning brick as a material in paving construction, says the "Good Roads Magazine," which gives an interesting and instructive account of brick paving in Grand Rapids, Mich., a portion of which follows:

The first vitrified brick pavements were laid in 1891, and the city now has seventy-five streets, or sections of streets, which are surfaced with this material. One particularly noticeable feature of the work which obtained practically from the beginning is the quality of the foundations upon which the brick streets were laid. These have been, and are still being, constructed of concrete six inches in thickness, finished with a smooth surface to the grade of the completed street.

The sand used for cushion, and which was easily obtainable, may be described as a soft velvety fine sand, very easily compressed, and it is believed by those familiar with the work of construction, judging from the present appearance of the streets, that the fact that this sand lends itself to uniform compression accounts in large measure for the satisfactory results obtained in connection with the laying of a durable pavement. Another interesting point easily observable by those who are conversant with brick streets in other cities of the middle west, is that the quality of the brick obtained from the beginning of brick paving construction in Grand Rapids was much above the average and shows evidence of a uniformity of manufacture, although twelve different manufacturers supplied brick for the purpose. Importance is also given to the fact that the compaction by rolling after the brick were placed in position has been done with a skill and care that has added to the longevity of the pavement.

On the first brick streets built in Grand Rapids, the authorities used pitch for a filler, the character and kind of which is not known to a certainty, but is believed to have been what is now known on the market as No. 4 or No. 6. On two streets, Shawmut avenue, built in 1894 and Lake avenue, built in 1897, a sand filler was used. In 1897 East

Bridge street was constructed with a filler of cement grout, but this construction was then abandoned until about 1901, when it was resumed and has since been generally adopted.

In the earlier construction, the cement grout was made by a mixture of one part cement to two parts sand, and no expansion cushion was provided. Later the grout was proportioned one to one and an expansion cushion was provided next to the curb in one or two cases, but for the most part expansion cushions were provided for in the interstices of five courses of brick with bituminous filler laid at right angles with and across the entire width of the street. After this experiment and practice, the expansion cushion next the curb was abandoned, and for a few years, until 1909, the practice in the use of transverse cushions only was almost universally followed in the case of the use of cement grout filler. A combined filler of pitch and cement grout and asphalt and grout were used in some instances. After the asphalt fillers came into use a few of the streets were filled with that material.

Monroe street, which is regarded as the principal business street of the city and carries a heavy traffic, was one of the first to be laid with brick in 1891, and was reconstructed with vitrified brick of block size in 1909. It is stated that the old brick themselves were not worn beyond use in spite of their eighteen years' service, but that the street had become so irregular and uneven because of the many cuts and openings which had been made in it, that the public demanded a better street. This street, as it exists today, is considered to combine the best practice in brick paving as demonstrated by the several years of experience in Grand Rapids, and confirmed by the history of vitrified brick street development in other cities. The new surface was laid on the old concrete foundation, and according to the methods which had been found most effective, viz., a thoroughly compacted sand cushion, block well rolled after laying, cement grout filler, and expansion cushions next to the curb. Transverse cushions are not attempted at all on this street, except a three-quarter-inch joint every fifty feet, between the outer rails of the street railway tracks.

Mr. E. H. Christ, a member of the board of public works, and others familiar with the subject, recently gave a representative of this publication information concerning the building and development of brick paving in Grand Rapids, which may be summarized as follows:

The brick as observed at present in the streets where sand filler was used are found to be chipped and worn about the edges and dirt finds a lodging place in the interstices. The same condition is found to exist where bituminous fillers were used, to a greater or less extent, according to their age, and also where the one-to-two cement filler was used, except at the gutters.

In the case of the older cement filled streets only a measure of imperfection is shown, such as might be expected in two particulars: where the cross expansion cushions were used the expected defects appear unmistakably; and where there was a neglect in providing a sufficient expansion cushion next to the curb it is again apparent that the bricks were pinched as though put in a vise, the result being that the bricks appear chipped and in some instances crushed. In the section of street lying between the transverse expansion cushions and laid with cement grout, the surfaces are smooth, unbroken and sanitary.

According to the 1909 report of the board of public works, Grand Rapids has 296.37 miles of streets, of which 183.5 miles have been improved.

During 1909 contracts for brick paving were let on streets in Grand Rapids having a total yardage of 60,689. A six-inch Portland cement concrete foundation in proportions of 1 part cement, 3 parts sand and 6 parts gravel or broken stone, was specified in all cases.

MURPHYSBORO PAVING BRICK

Many Well Paved Streets Demonstrate the Superior Qualities of the Celebrated Egyptian Paving Brick Made at the Murphysboro Plant

Many well paved streets in cities of Illinois and surrounding states, demonstrate the wearing qualities of the celebrated "Egyptian" pavers made by the Murphysboro Paving Brick Co., at its plant near Murphysboro, Ill.

The main buildings at the plant are, an engine and boiler room, 40x144 ft., machine room, 66x145 ft. and dry pan room, 52x56 ft.

The company owns 55 acres of land, underlaid with 110 feet of hard blue and gray shale, which shale is procured at a depth of 12 feet, by the use of Vulcan steam shovel, the clay overburden being removed by a Thew Steam shovel of the automatic type O.

From the pit, the clay is hauled to the plant, in 1½-yd. cars, by mules.

The clay is not stored, except a supply which is kept

The output of the plant is largely paving brick, although building brick are also made. The plant is run continuously throughout the year. The officers are: W. H. Hill, president and general manager; H. H. Sexton, vice-president and H. H. Downey, superintendent. One hundred and fifty men are employed at the plant.

MILLIONS FOR PAVING.

The second largest city in the world, it is not strange that New York calls for a vast amount of paving and that this work must go on without interruption year after year, since old pavements are wearing out and new territory being cut up by streets. A report prepared by a committee of experts for a conference of civic organizations that met in New York May 23, presents figures from which the conclusion is drawn that the city must, to



The plant of the Murphysboro (Ill.) Paving Brick Co.—Where the Egyptian Block Are Made.

for use in bad weather, but is taken direct to the two 9-ft. Raymond dry pans, where it is ground and carried by bucket elevators to the piano-wire screens, then tempered in the 12-ft. pugmill, also of the Raymond make, enough water being added to make it plastic but no grog being used. From the molding machines the brick are loaded onto single-deck cars and transferred to the large capacity dryer, where they are dried by the waste hot-air system. This 24-track dryer is of the company's own make. Twenty hours are required for the drying process, after which the brick are set in kilns, 30 ft. high and 5 over 2.

The kiln battery is composed of 10 30-ft. round down draft kilns and 4 square down draft kilns, with 24 furnaces each. The kiln floors are of the open type and coal is the fuel used both for water making and burning.

The plant has a splendid power equipment consisting of two 250-h. p. corliss engines; one 150-h. p. engine; two boilers of 150-h. p., 66x22 ft. and two boilers 66x18 feet.

bring about improved street conditions, spend from six to eight million dollars a year for new pavements in the future.

The report recommends that sample pieces of stone, rock asphalt and wood block pavements be laid, and that as fast as the suitability of each of these three to varying conditions is demonstrated, they will take the place of the present worn-out pavement.

With this large sum expended annually in New York City, it would seem that paving brick manufacturers should make a more vigorous effort to have a larger proportion of brick used in that city. The field is well worthy of cultivation.

We are advised that the Little Falls Fire Clay Co., which failed some time ago, has resumed the operation of its tile plant at Toppenish, Wash., under entirely different management. The reason assigned for the failure of the company was the erection of a \$400,000 plant at Bayne, Wash., which divided the market.

DETROIT'S PAVING MUDDLE.

The eyes of the paving brick industry have been centered upon the city of Detroit recently, where a controversy has been underway between the municipal authorities and a number of prominent paving brick companies, regarding the acceptance of certain paving brick furnished for the city. One of the troubles in Detroit seems to be the too great reliance placed by the city authorities on the rattler test. As all paving brick people know, the rattler test is a very uncertain proposition and time and again have there been cases of unfairness toward paving brick interests because of the variance in this test.

The Detroit matter has been raised to a question of considerable importance, because of the investigation authorized by the Board of Commissions, a special committee having been appointed for the purpose. Among those who appeared at the hearings and made statements regarding the matter were Mr. Chas. J. Deckman, head of the Deckman-Duty Brick Co., of Cleveland, and president of the National Association of Brick Paving Manufacturers, and Mr. W. P. Blair, secretary of the National Association. Among other things, Mr. Blair stated that there was not a single piece of brick pavement in Detroit properly laid. He denounced the work as outrageous and said, in unqualified terms, that whatever bad pavement has developed in the streets is largely due to improper laying. This is in the face of the fact that 111 miles of Detroit's streets are paved with brick. Expert testimony was furnished during the investigation by Prof. A. V. Bleininger of the University of Illinois and by Prof. Edward Orton, Jr., of the Ohio State University.

In his statement to the committee, Mr. Deckman said that the rattler test is very uncertain and undependable because it is quite possible that the test can be manipulated against or to the advantages of the brick submitted and he went into some detail regarding this matter.

The Deckman-Duty Co. sold during the past year some 15 million brick to the city of Detroit.

In his remarks before the committee, Mr. Blair said:

"Since receiving your invitation to appear before you we have carefully examined more than 40 streets three years old and over and in all we found unquestioned evidence of such departure from details of proper construction that it is but fair to expect just such streets as you have. In fact, it would be entirely unreasonable to expect anything else. We found but two streets that approached a condition at all commendable. One was St. Aubin, from Guoin to Jefferson, in the construction of which Logan block was used, and Sherman street, from Hastings to St. Aubin, in the construction of which Malvern or Medal block was used. We regard the condition of these streets purely as a fortunate accident—a case wherein the specifications were entirely violated in a way to better the street.

"Portions of many streets were found where the pavements were all right; enough that it would seem a reasonable inquiry even to a layman as to why this portion of a street was all right and another portion all wrong, and whether it could be possible that it just happened that all the bad brick occupy this place in the pavement and the good ones that, and so on. At any rate, it was perfectly clear to my mind that the condition of the pavements was due to the way the brick were placed in the pavement.

Due to Faulty Construction.

"The condition of all these streets is clearly due to a failure to properly construct them. Streets built of the same brick, in kind and quality, can be shown you in Cleveland and Cuyahoga county that do not show as much out-of-repair condition, the whole street considered, anywhere equal to that of a square yard on the streets named. Other streets of more recent construction were examined. One pavement, that of Chene street, from Jefferson to Catherine, upon which Townsend block is used, I particularly noticed, as but a few days ago I traveled over a roadway of many miles in length, made of the same kind and quality of brick. This road has been in use several years; it is admired and praised by all who pass over it—smooth, without a single wave or depression—nothing in common with Chene street except the brick on Chene street are one and the same quality as those used on the road of which I speak.

Work "Ignorantly Done."

"On another job I approached the inspector, calling his attention to the fact that the sand cushion was over three inches in thickness at a certain point in the middle of the street. His reply was that that would be cured in the rolling. In neither case was there any effort to compress the sand cushion. On one street under construction I did not find a good smooth concrete foundation, but all the rest of the work was being ignorantly done. Any one of the several steps taken in the construction of the pavement was so far from being right that each was fatal to the value of the pavement itself. I did not find a specification on any one of the jobs visited. I did not find a uniform application of the cement filler on a single street examined. Even where it was applied properly in spots, the quality of the cement was questionable in that it seemed to set too quickly. This action might have been due to unseen causes which I was unable to observe.

"Why such streets from such brick? There was and is but one of two answers. Either the specifications under which they are built are wrong and incomplete, or they are wholly disregarded. In order to answer, the question satisfactorily to myself, I next sought a copy of your city's specifications and I wish to say, unhesitatingly and unqualifiedly that no director of public service, engineer or contractor can build a street in compliance with the specifications other than just such streets as you have.

Assails Official System.

"I am surprised to find that the executive head of the department of public works has no jurisdiction whatever over the engineering department, or that the engineering department has no jurisdiction and is in fact unconnected with the execution of the specifications it writes. The incongruity arising from such official organization may be expected. * * * Your commissioner of public works has invited our assistance in the matter of construction, to which we would gladly respond, as we have in the past seven years to other cities, but it is obvious that our hands would be tied as his are."

Many Companies Interested.

A number of paving brick manufacturers, including the Alliance Clay & Fire Brick Co. and the Deckman-Duty Co., have had their brick held up on technicalities and the treatment of the brick men by the city has been an injury to the paving brick interests. The city of Detroit has purchased the past year through its commissioners, brick of the following brands in the following quantities:

Bessemer, 2,265,000; Massillon, 95,000; Townsend, 382,000; Speedway, 940,000; Novelty 714,000; Wooster, 600,000; Champion, 795,000; Nelsonville, 1,278,000; Medal, 1,200,000; Wassall, 708,000. Bessemer, the brick purchased in the largest quantity, has made the best showing in the tests so far.

The investigation proved more or less of an investigation of the value of the rattler. The atmosphere seems to have been considerably clarified on that subject. Commissioner Haarer and former Commissioner of Public Works Maybury, both of Detroit, are against it, the latter saying he does not believe in it at all.

Some of the expert testimony, however, was directly contrary to this. Prof. Orton, Jr., of the Ohio State University, expressed the opinion that the rattler test is the best preliminary test that can be given to paving brick, but it must be considered more as the indicator of the relative value of brick submitted for examination.

J. G. Barbour, manager of the Metropolitan Paving Brick Co., Canton, O., was an important witness. Among other statements, he made the following:

He said in substance that he thinks the rattler, if used correctly and continuously on a large number of samples, will give the relative value of the wearing qualities of the brick, but he added the words "to a great extent." Questioned as to what extent he considers a great extent he evaded a specific reply, saying in part that the test applies mostly to the surfaces of the brick and may not disclose imperfections in the body of the block beneath the abraded surface. He said that the brick is supposed to be of equal texture all the way through.

Prof. Bleininger acted in an advisory character to the Detroit Board of Commissions and was their guest. He was not, therefore, one of the witnesses at the investigation but played an important part in promoting the investigation.

VITICLAY—NEW PAVING BRICK

Construction Soon to be Begun on Large Plant to be Erected by the Commonwealth Clay Co., at Streator, Ill.



"Viticlay" is the name which has been given to a new paving brick, which is to be produced at the proposed plant which the Commonwealth Clay Co., with offices in the Ames

Bldg., Streator, Ill., is planning to erect at Streator. Mr. Albert Warren, formerly of Chicago, who has been prominently connected with the brick industry for a period of twenty-five years, who has had considerable experience in plant construction and the manufacture and sale of brick, is at the head of the concern, and is enthusiastic as to the possibilities to be accomplished. The prospectus sent out by the company is in part as follows:

For some months Streator with its great deposits of clay material has been under the scrutiny of great moneyed interests with a view of locating a plant for the purpose of brick manufacture.

The conditions as seen at a glance at Streator were briefly these: Here was a city comparatively young, possessing the best railroad facilities of any city in the state outside of Chicago, a city built up largely by the inherent energy of its own citizens, out of the natural resources with which it was surrounded and offering in its very nature a veritable haven of opportunities for money making.

Some of the citizens of Streator suggested the advisability of organizing a company for the manufacture of clay products. The zeal exercised in carrying out these suggestions cannot be said to be a "zeal without knowledge" or without careful forethought and preparation. A number of men conspicuous in the history of Illinois brick interests were brought to Streator to look over the situation. After making a careful inspection of the clay deposits, they pronounced them in quality and quantity the best that could be found in the United States.

A car load of clay taken from the land upon which an option had been obtained was sent to the American Clay Machinery Co., of Bucyrus, Ohio, to have its qualities thoroughly tested. The result of this test was "Viticlay," a superior brick, pronounced by brick men the finest specimen of paving brick ever made. These samples are on exhibition in various towns of the state. The brick has been tested according to the standard prescribed by the National Brick Makers' Association and has been found to possess all those features in proper quantity and quality that make an ideal paving brick.

In addition to the paving brick the company has from the same material fine samples of brick for facing purposes.

The company has secured an option on seventeen hundred acres of these clay deposits and purchased over fifty acres from which the above samples were made.

Arguments in Favor of Brick Paving.

Never before in the history of the country has there been such an agitation for good roads and never before was the necessity for same so obvious as at present.

The item of greatest cost in transportation and the one item more than any other that cuts the profits from the farm and garden produce and adds a higher cost of living to the urban dweller, is the item occasioned by hauling this produce over bad roads to the place of market or of shipment.

Another demand for good roads comes from the speedier and more popular mode of travel by automobile, which is being used more and more by the farmers and seems destined in the near future to displace the horse not only as a means of travel, but as a means of rural traffic as well.

It is estimated that within the last thirty years Illinois alone has spent one hundred million dollars on the highways of the state, and that one-half of the amount spent on the roads has been wasted, for the reason that the grades and materials out of which the roads have been made and repaired were not of a permanent nature. There is at the present time being spent on the highways of the state annually about five millions dollars, one-half of which is being wasted for the same reason. Add to this the eighteen or twenty million dollars that is annually wasted in the states on account of bad roads, and we are not surprised that the press everywhere and the farmers' institutes and the public speakers all over the country are demanding a system of permanent road improvement. The above estimates are within those made by the Secretary of Agriculture.

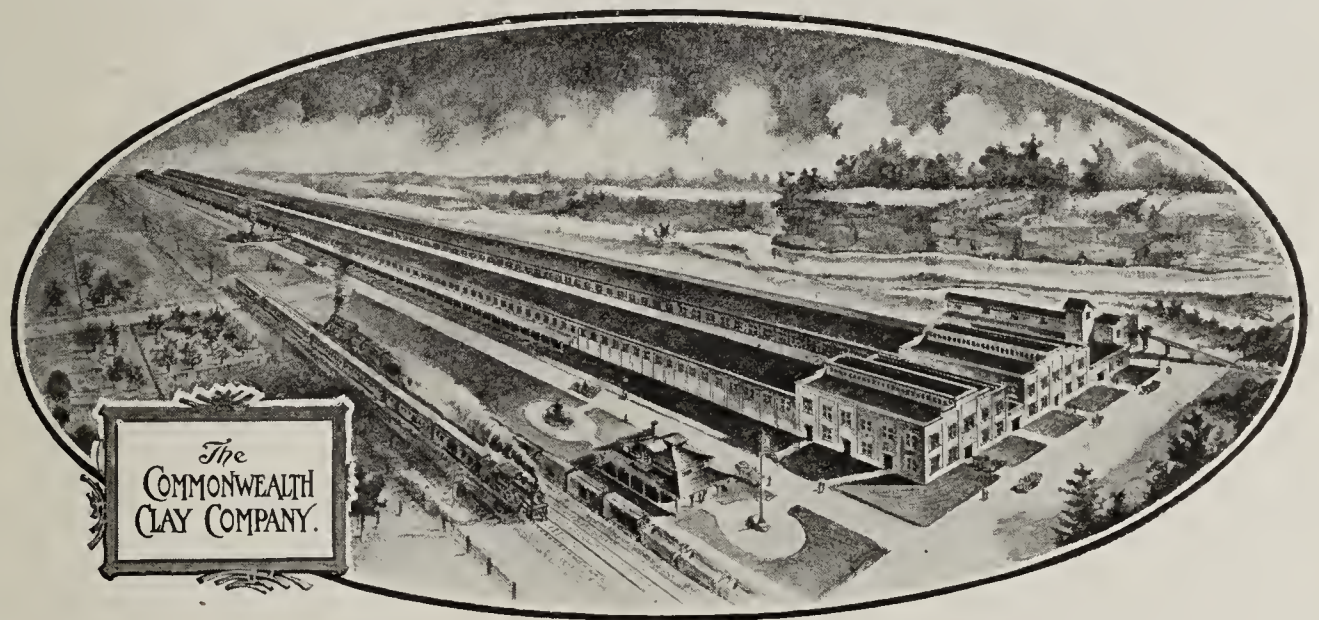
Cities and towns all over the country are discarding gravel and macadam for paving purposes and using brick, and a great many miles of country road have been paved with the same material, and wherever brick has been used for country paving there is an unceasing demand for extension of same.

Vitrified brick paved roadways properly constructed are permanent, practical, possible and economical. Hundreds of miles are now in use.

The Norton Brick & Mfg. Co. has been incorporated at Norton, Va., with \$25,000 capital stock. The officers are E. G. Buck, president; C. J. Swank, vice-president; Janie Buck, secretary

BRICK FOR CITY AND COUNTRY.

The brick pavement on the Ellicott Creek Road, at Tonawanda, N. Y., is being constructed under the provisions of the good roads law, which provides that where



a county road joins an improved road in a city the county road can be similarly improved, the expense being borne by the city, county and state.

ROUGH BRICK POPULAR.

Rough effects in brick work have a great vogue today and the house built of it will have a wealth of harmonious color and a picturesque appearance, all its own, which is utterly impossible to convey by illustrations.—American Carpenter and Builder.

PAVING AT SHEBOYGAN, WIS.

Further information as to the paving being done at Sheboygan, Wis., which has been mentioned heretofore in this journal, is to the effect that the brick were furnished by the firm of Ricketson & Schwartz, of Milwaukee, the price being \$24.70 per thousand.



BRICK AND CLAY RECORD

VOL. XXXIX. SEPTEMBER 15, 1911 No. 6

VITRIFIED WISDOM.

The clay manufacturer without a cost system will assuredly bump the bumps.

A cost system will only save the clay man who profits by what the cost system discovers for him.

The successful clay manufacturer of today is the man with ideas; he does things by methods the other fellow does not think of.

The secret of most brickmakers' success rests in untiring energy, unremitting application, manly courage and Job-like patience.

Selling clay products at a loss does not lead to the road to riches.

Let the profitless jobs go to the other fellows; center all efforts on the orders that show a profit.

"He sells at less than cost, but that's his business," said a buyer of clay products. The trouble is too many of our clay manufacturers are in this business—not of clay manufacturing—but of selling product at less than cost. Clay manufacturing is a good business, but selling brick at a loss is a poor business to be in.

The clay manufacturer who starts in business before he is ready—who is not well informed as to the cost of fuel, labor and repair bills—seldom gets there.

"Waste not, want not," is an axiom, which contains as good logic, today as when it was first coined, and might well be applied to the lavish and wasteful use of fuel and valuable clay, at many clay plants. While the supply is abundant today, in many sections, Eastern manufacturers are prospecting for clay and oftentimes are put to great expense to ship in sufficient clay to keep their plants going. This should serve as a warning to all engaged in the clay industry to conserve these valuable clay deposits, not only for the use of this—but the future generations.

BRICK COMING INTO ITS OWN.

With the increasing desire in our country that all things about us shall be simple as well as beautiful, brick is again coming into its own as a building material. Brick-making as an industry is being superseded by brick-making as an art. The ancient Egyptians, Assyrians and other races of the Orient wrought their palaces and temples of brick with marvelous skill and effects of beauty that we have yet hardly equaled. Some of the most beautiful Italian and French palaces were built of brick during the Renaissance, and the history of England can be traced in its mansions, manor houses, palaces and churches of soft red brick.

In our country brick for a time was rejected by all lovers of beauty, because its manufacture sank into a mechanical process whereby hard, tight, flat cakes of hideous color and mathematical precision were turned out by machinery to provide a building material that should be at once cheap and durable.

Within the last 25 years, however, architects have been forcing on the manufacturers a demand for beautiful brick. Architects, designers and manufacturers are now working in unison to produce brick that shall meet every demand for beauty. The result is brick of rich, variegated color and texture that charm the eye and that are in active demand for exterior construction.—Myra Emmons in Arts and Decoration.

Many employers make the mistake of curbing any inclinations on the part of their employes to lunge ahead and take the lead.

On the contrary, many clay manufacturers, as well as various other captains of industry, owe their success in building up mammoth industries to their ability in selecting responsible help and then giving them full control of some portion of the work. No other method could be possible in the management of many of our great clay manufacturing establishments.

The man who started in a small way, looking after all the details of the business, himself, finds it difficult to turn over important matters to a subordinate, but he should take into consideration that his valuable time should not be employed in carrying out details, which may be attended to by a \$15.00 a week man.

If you have a man at your plant who shows judgment and initiative "give him his head" and he may surprise you by improving on your methods, and may turn out a brick far superior to your former product. Give him a show, at any rate; under your watchful eye, he, at least, will not work much havoc.

Small men have small ways; great men have correspondingly great ways. Which is your class?

IT COST HIM ONLY \$1.00

for an ad in "Brick and Clay Record's" Classified Department, and he wrote: "I received over thirty answers and I am well pleased with the results." This, from one of our advertisers, is only one instance of the efficiency of these little business helps—Classified Ads.

If you want to reach any one in the clay industry, send a Classified Ad to "Brick and Clay Record." It reaches a very large percentage of those engaged in the business. Rates, \$2.00 per inch—\$1.00 per half-inch.

CLAY SHOW WEEK.

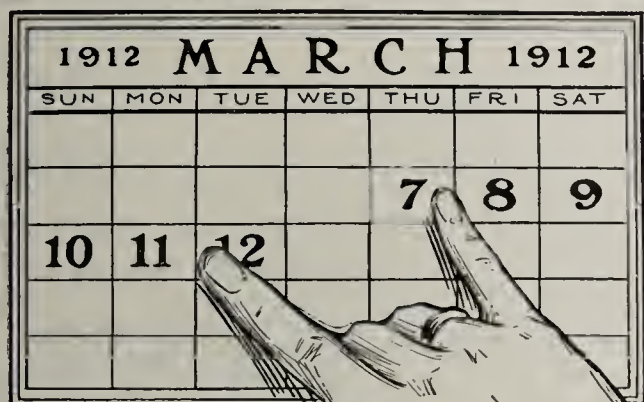
The week from March 7th to 12th is destined to be a memorable one, in the clay industry. Probably there never has or never will be, such a notable gathering of men from all branches of the trade, for, during the Clay Show week, a series of conventions of various organizations in the industry will be held. The exact days of each meeting have not, as yet been definitely decided upon, but will soon be announced.

The "Live Wires of the Industry" will meet in Chicago to show what they are doing and to assist in a united effort to give clay products a better standing before the general public.

The following associations have already signified their intention to hold their annual conventions in Chicago during Exposition Week:

- The National Brick Manufacturers Association.
- The National Paving Brick Manufacturers Association.
- The Building Brick Association of America.
- The Clay Machinery Manufacturers Association.
- The American Ceramic Society.
- The Illinois Clay-Workers Association.

CLAY PRODUCTS SHOW COLISEUM, CHICAGO



**THIS IS YOUR SHOW
HAVE AN EXHIBIT
BE SURE TO ATTEND
GET OTHERS TO GO**

In addition to these conventions other associations allied to the clay trade are invited to hold their annual conventions in Chicago during the Exposition.

"This is your show" and it is your opportunity to show that you appreciate what others are trying to do to benefit the whole industry which includes you.

PLANNING EXHIBITS FOR THE SHOW.

Our Ohio correspondent advises us that a number of this domestic and sanitary pottery manufacturers will maintain exhibits at the International Brick and Clay Products Exposition which will be held in Chicago, March 7-12, 1912. The Potters Co-Operative Co., which carried off a "Highest Award" Diploma at the Cincinnati, O., Exposition, last fall, will maintain a large exhibit so it is reported, which will be under the management of T. A. McNicol, sales manager for this company.

THEY LIKE BRICK SPEEDWAY.

It has been reported by adverse interests that the brick were to be removed from the wonderful Indianapolis speedway on account of the damage to auto tires. Letters from great automobile drivers are proof of the fact that this type of speedway is more popular than ever with the drivers and they are the ones who have the say in these matters. Mr. R. D. Culver, of the Wabash Clay Co., which furnished the brick for the speedway, states that there is absolutely no truth in the story

that the speedway people contemplate taking up their brick track. The letters follow:

Gentlemen: In all my experience in speed work I do not believe I have ever gone into a course where I felt as safe as on the Indianapolis Motor Speedway course on May 30th. I had no sprains or stiff feelings as one experiences in a road race or dirt track course.

A great many times the danger has been marked by tires bursting—the front tires especially. As I believe I had nearly as many tires blow as the majority of the boys, would say, that in no instance did I experience any difficulty in righting the car, which was due without question to the construction of the course. Very respectfully yours,

Fred Belcher.

Dear Sirs:—

I wish to say that, in my opinion, if all automobile races were confined to tracks or speedways paved with brick it would be much better for the sport. I am a great believer in an extremely hard surface for automobile racing, and I believe that brick is about the only thing that will withstand the wear and tear of speeding motor cars. Yours very truly,

RAY HARROUN.

Gentlemen:

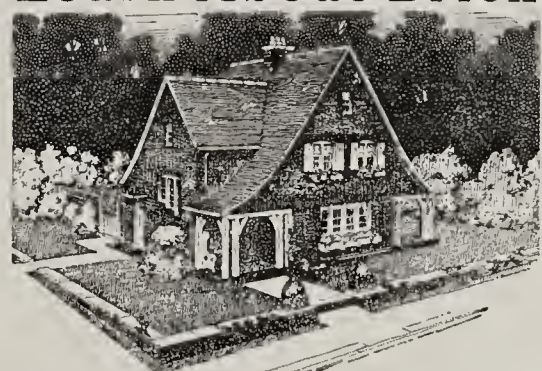
I would like to tell you how very fine I think the surface of the Indianapolis Speedway is. The brick allows very little skidding, very little wear on the tires, good hard and fast surface which makes it comparatively safe when you blow a tire, as the rim cannot dig in and, therefore, there is practically no chance of a car over turning. Very sincerely,

DAVID BRUCE BROWN.

KEEPING UP THE FIGHT.

The Building Brick Association is continuing its good work of advertising and pushing the sale of brick and good results are being realized by brick manufacturers in all parts of the country. The accompanying advertisement

Learn About Brick



**Every one admires a brick house.
Few realize its low cost and economy.**

Brick is the most beautiful, most reliable, really the cheapest building material in the world. The cost of wood has risen until a wood house costs more to build and maintain than a brick house.

Learn the Facts. Send today for our **Free Books**, "A Revolution in Building Materials," and "The Cost of a House." **Two Books of New House Designs** from leading architects' offices, sent on receipt of price.

"A House of Brick for \$10,000," 2d Edition, 41 designs, 25c.
"A House of Brick of Moderate Cost" (\$3,000 to \$7,000). 71 designs, 50c.

When writing state character of work you have in mind.

TRADE MARK
THE BUILDING BRICK ASSOCIATION OF AMERICA
1602 Flatiron Building, New York

is a fac-simile of those which appeared in a number of leading journals last month. This organization should receive the heartiest support and encouragement from all interested in furthering the interests of the burned clay industry.

CONCRETE SMOKESTACK COLLAPSES.

Without warning, a new concrete smokestack at the factory of the Flambeau Paper Co., at Park Falls, Minn., collapsed, precipitating two men who were working on the stack to the ground, 100 feet below, causing the death of one of the men and the serious injury of the other.

TIME BY THE FORELOCK.

The time is soon coming when the state of Illinois must face the question of improving its country highways. In fact, the time has arrived, for the necessity of better roads has forced itself very strongly upon the people of the state, because of the increased automobile traffic and the increased need for cheaper transportation of farm produce.

The automobile has come to stay and it is no longer merely a vehicle of pleasure. The farmer himself has adopted it largely for transportation to and from the nearest village where he does his business and it is fast replacing the horse for heavy transportation.

Automobile traffic, however, is playing havoc with the ordinary country roads, such as before answered the purpose in the state of Illinois and it is now necessary to adopt some state wide plan for road improvements of a permanent character.

It is the duty of the people of this state to start on its road improvement plans in the right way and at the very start a decision should be made as to the best form of country highway construction.

In this connection, it is the duty of the paving brick interests of the state to show the people fully the superior merits of brick as a surfacing material for country highways. Not only can they show brick's superiority for this purpose but they can show the practical economy of brick construction over other forms of road construction.

Alive to the importance of this matter, a movement has been started in the state, in which Mr. Rodgers, secretary and treasurer of the Alton Brick Co., Alton, Ill., has taken a prominent part. Mr. Rodgers, in his letters, has impressed upon the brick makers very strongly the advisability of more publicity for paving brick. He suggests a campaign of education to thoroughly inform the people throughout the state as to the superiority of brick for country roads.

DRY WALLS IN BRICK HOUSE.

One of our subscribers wrote us, asking information as follows:

I am building a brick residence and want a little advice. The building has a thirteen-inch wall, faced with dry press brick over hollow brick of my own make. Would you advise the hydration of the inside walls, before plastering, to insure perfectly damp-proof walls. I intend to plaster directly on the brick, without furring.

The architect says to waterproof the walls; the contractor says it is not necessary. Which am I to believe? I do not want damp walls in this house, as it would not be much credit to the brick industry, if such should be the case.

Our advice is as follows: Replying to your inquiry, we would be inclined to agree with the mason contractors regarding the walls of your new house. If you were building a solid brick, we would say that it might be advisable to water-proof the inside walls but hollow brick should give sufficient air space to prevent the dampness coming through.

DOING THRIVING BUSINESS.

The Standard Brick Manufacturing Co., of Evansville, Ind., are doing a thriving business with a full force of men at work at the brick yard. It was found necessary to put on five more teams to handle the orders. This company is supplying the brick for six school buildings in that and adjacent cities, also brick for the new Presbyterian Church, a new laundry and fifteen new residences which are being constructed in Evansville.

PLANNING IN SCIENTIFIC MANAGEMENT.

Scientific management, either in the shop or on construction work, does not involve merely the recording of the amount of work accomplished by the men and machinery, nor does it involve merely the introduction of some form of piece work or task work by which the men are given an incentive to work at a higher rate of speed. The ultimate aim of scientific management must include these objects, but before accurate records can be made of work which is being done, and before tasks can be given to the men or piece rates can be established, a lot of preparatory work must be done.

Men must be taught how to plan work ahead for the various groups of workmen employed on the job and other men must be trained so that they can show each workman just what he is to do each day and the quickest and best way to do it. In this way a task can be laid out in advance for each man, and the different workmen can be arranged so that the work of each will fit into that of another, and the proper oversight and inspection can be provided in a manner quite different from what is customarily employed in day work methods.—Sanford E. Thompson.

TO REMOVE PAINT FROM BRICK WALLS.

A contractor, being called upon to remove some old oil paint from a brick wall, used the following directions successfully:

Dissolve 10 pounds caustic soda or saponified lye in 5 gallons of water, and stir into the solution 5 quarts mineral oil (the cheapest grade will answer); add enough sifted sawdust to make a pasty substance that will hold on a wall without running down. Plaster this thickly on the old paint, and in a few hours scrape off the resolved substance. If you wish to repaint the wall, rinse well with clear water, and apply a coat of vinegar to neutralize the alkali that may have remained in the pores of the brick.

Or, slake in one vessel a quantity of builders' lime, and in another vessel dissolve a similar quantity, by weight, of soda ash, leaving over night. Mix the liquor from the soda ash with the slaked lime next day, adding enough whiting to make a paste, and apply this to the old paint. In this case it is also necessary to rinse the wall from which the paint has been removed, giving it a coat of vinegar before repainting.

BUYS THIRD PLANT.

The Acme Pressed Brick Co. of Millsap, Tex., of which Mr. Walter R. Bennett is manager and vice president, has recently purchased the plant of the Denton Pressed Brick Co., Denton, Tex. This will make the third plant owned by this enterprising company, they now operating two yards at Millsap, the three plants operating five Boyd presses, having a total capacity of 100,000 brick per day.

BOILER CORROSION.

External corrosion of boilers is caused by leaking seams, rivets and gaskets. Wet ashes and soot will corrode the plate if left in contact with it.

READS IT FROM COVER TO COVER.

Mr. J. W. Jenkins, of the M. J. Lee Brick & Tile Co., of Paola, Kan., writes: "I do not want to miss a single copy of 'Brick and Clay Record.' When it comes, I am not satisfied until I read it through from cover to cover."

Ads in "Brick and Clay Record" win, Nine times out of Ten.

HOME OF THE SWIFT DRYER AND KILN

Use of Slack Coal Effects Great Economy in Burning Ware With Kilns of the Swift Type

One and one-half miles west of the City of Ottawa, Illinois, hemmed in on all sides by valuable shale hills, is located the Swift Terra Cotta Brick & Tile Works.

The plant was purchased in 1905 from the Celadon Roofing Tile Co., which was manufacturing terra cotta and roofing tile. After looking over the field Mr. Swift decided the location was very desirable for a drain tile plant, there being no shale tile plant closer than 60 miles.

From the time the first tile were turned out, up to the present time the factory has not been able to supply the demand for its product. In converting the factory from a terra cotta to a drain tile plant they first built some Swift kilns, the kilns that were replaced being both the patented and common type, but all requiring the use of lump or mine run coal and Mr. Swift says that burning that grade of fuel is like firing with paper dollars.

With his own style of kiln, Mr. Swift says he is now able to burn a 30-foot inside diameter kiln with 17 to 20 tons slack coal, where he formerly used 22 to 24 tons lump

after considerable expense, installed a hot-floor system, which, while it at first seemed simple, nevertheless proved to be a trying problem, in that it would not heat all parts of the building to the same degree of heat at the same time, but after several tear-ups and building over, Mr. Swift now boasts of having the only plant in the United States operating in zero weather with no drying cost, as only exhaust steam is used in the building, in fact, there is no live steam connection to any part of the building. This drying floor has been in constant operation since the winter of 1906 and without one cent of repair. Even during the winter months with the thermometer below zero Mr. Swift claims to be able to close his building on Saturday evening and leave it until Monday morning with no other heat than that radiated from the floor that has had no steam since the Saturday's exhaust. Tile can be dried in this dryer in 48 hours in summer and 72 hours in the winter season.

The output of the factory consists chiefly of drain tile



Plant of the Swift Terra Cotta Brick & Tile Co., at Ottawa, Ill.

and for evenness of burn the present kilns are not to be compared with the others, as he claims he can show anyone coming at any time to see these kilns that they are all hard even burns—the top, bottom and sides cannot be told one from the other. These kilns have been on the market for years and the firm extend a cordial invitation to any one having kiln troubles to come and see these kilns in operation. The watersmoking is done with banked fires and the services of a burner are required but 36 hours to burn a kiln.

The power equipment at the Swift plant consists of one 125-h. p. boiler, a 75-h. p. Atlas engine, one 9-ft. American dry pan, Dunlap screens, and Brewer tile and pug mills and cutting tables.

When the factory was put in operation, the drying was planned to be done in a 5-track waste-heat dryer and the floors in the main building were piped with steam pipes.

After operating with these dryers, a few weeks, the extra expense of using live steam to run the engine and fan as well as to keep the pipes in the dryer heated was a constant drain on the profits and Mr. Swift began experimenting with different methods of drying, and finally

in sizes from 4 to 18-inch and all marketed within a radius of 75 miles, shipping being done on the C. R. I. & P. and C. B. & Q. Rys. The output of the plant averages about 250 cars, shipped, besides the large amount taken by the local trade. Tile are delivered to the local trade where desired, a Kelly truck being used for this purpose, a cut of which is shown with a load of 12-inch tile ready to start for a job, 10 miles from the plant, four trips daily being made.

The idea of burning any kind of clay ware with slack coal, as first conceived by Mr. Swift, was ridiculed and it was only by taking the entire responsibility of changing kilns to his design, furnishing his own capital and guaranteeing results from the first burn that he was enabled to interest clay manufacturers. Many of the early day Swift kilns are still in use and giving good service.

Mr. Swift tells us, that after the first success of his kiln and furnaces became known several different designs or imitations were offered, but they were soon in the discard, as Mr. Swift's right covered the only practical way to coke and burn the slack. The kilns he has to offer are of various designs, round, square, up and down-draft, with and without grates, solid or open bottom and he is



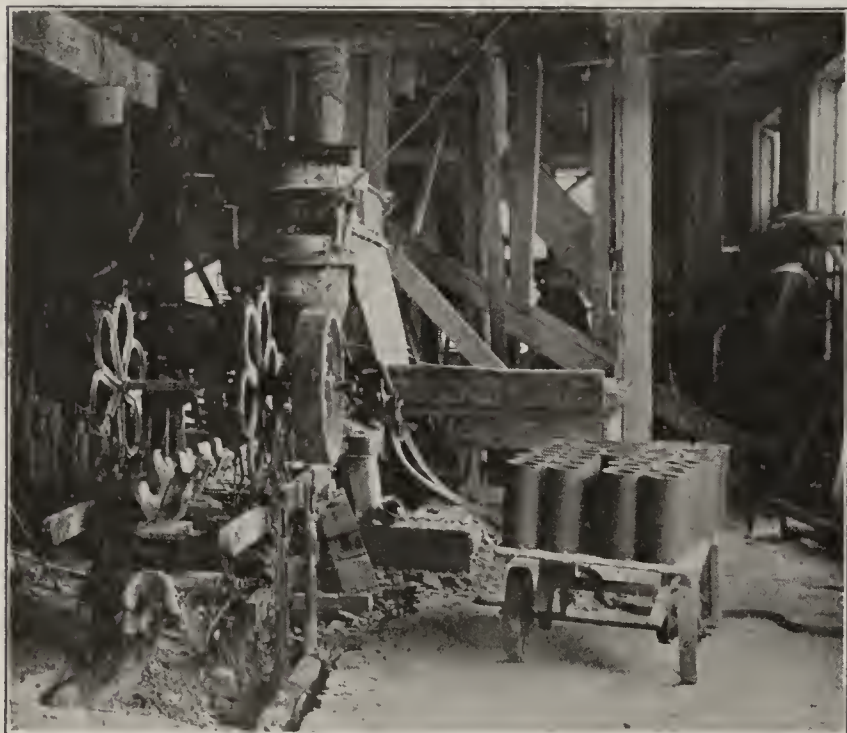
Typical Swift Kiln in Use at the Swift Plant, at Ottawa, Ill.

prepared to furnish a kiln to suit requirements and results are guaranteed.

Mr. Swift also has a portable furnace for those who use the scove kilns that have no permanent walls or furnaces, the burning being accomplished by firing direct in the arches. This furnace can be moved from kiln to kiln, burns slack or any grade of coal (slack preferred, owing to its cheapness). This furnace should appeal to manufacturers who wish to remove the entire kiln clean as they empty and who do not wish to be bothered with permanent walls and furnaces. These portable furnaces can be moved from kiln to kiln at a very small cost and

and most progressive clay plants in the United States and Canada.

Reports from Boston, Providence and Worcester indicate that the fall trade will be good. The immediate demand is light, but there is plenty of work in sight.



Brewer Machine in Active Service at the Swift Plant.

necessitate the purchase of only a few furnaces for a large capacity plant. Mr. Swift claims with this furnace he can watersmoke the most delicate clays, with slack coal, as well as finish the burn with the same grade from start to finish, get even burns and arch brick to be all line brick from ground to upper jet, from side wall to side wall, also have the arches clear of accumulated cinders and ashes, which are prevalent where direct firing is the custom.

The Swift kilns are well known to the older clayworkers and are in successful operation in some of the oldest



16-inch Tile Drying, on 2nd Floor of Dryer, by Radiation Hot-Floor System.

There is a great scarcity of water-struck brick, the demand for this popular brick being already greater than



Up-to-Date Delivery—184 Feet of 12-Inch Tile Loaded on Kelley Auto Truck.

the supply. Hartford and New Haven are using brick in great quantities, the demand in both of these cities being greater than ever before.



GOOD DEMAND FOR PAVERS.

The paving brick and block trade is reported to be very healthy this season in Pittsburg, Pa., as almost all of the counties in Western Pennsylvania are doing more or less work. Washington county, however, is taking the lead, and about 25 miles of roadway are to be paved this season.

The county commissioners of Washington county, Pa., have made public the cost of road improvement in that county, and with the thought in mind that the data might be of value to paving brick and paving block manufacturers in other parts of the country, the successful bidders and the costs are herewith presented:

United Fire Brick Co., Uniontown, four miles of the Coal Center-Pike Run road, at 60.9 cents per square yard; West Alexander-Burnsville road, three miles, at 66.15 cents per square yard, and the Beallsville-Zollarsville road, two and one-tenth miles, 63 cents per square yard. It is estimated that there are 27,500 and 14,850 square yards of paving, respectively in these roads.

The Pennsylvania Clay Co. of Pittsburg, was awarded the Finleyville-Thomas road, three and five-tenths miles, 65.1 cents per square yard, and 2,900 feet on the Washington-Cemetery road, Upper Ten Mile Plank road, at 63 cents a square yard. It is estimated that there are 27,500 and 5,800 square yards of paving respectively in these roads.

The Pittsburg-Buffalo Co. of Pittsburgh, secured the Cross Creek road, two and eight-tenth miles, at 54.25 cents per square yard; the Houston-West Middletown road, one and five-tenth miles, at 56 cents per square yard and the Robb Run road, one mile at 54.25 cents per square yard. It is estimated there are 19,800, 10,700 and 7,900 square yards of paving respectively in these roads.

James Porter, of Pittsburg, secured the Taylorstown "S" bridge road, one and six-tenth miles, and the Claysville-Bethany road, one and six-tenth miles, at 64.6 cents each per square yard.

After an idleness extending over almost six months, the large plant at the United Fire Brick Co., at Connellsville, Pa., has resumed operations. This concern will furnish over 5,400,000 pavers for highway improvement in Washington county. The contract calls for brick to pave 11.25 miles of roadway, out of the 21 miles which are to be built by the county. There were ten bidders. Vitified block will be used.

VITRIFIED PAVERS.

The city council of Portage, Wis., has adopted plans for the paving of Dewitt and Oneida streets, extending from the Court House to the Milwaukee depot, with vitified paving brick. We are informed that the contract for furnishing the brick for the paving of several streets in South Fork, Pa., was let to the Clearfield Brick & Clay Working Co. at \$18 per thousand, f. o. b. South Fork.

An Eastern paper states that the Main street of Lestershire, N. Y., will be paved with brick. Patterson block are to be used, the price being \$1.80 per square yard. The brick were tested at the Cornell University.

It is planned to pave Main street, in Southbridge, Mass., with brick next year. A portion of Hamilton street will also be paved with brick.

Seattle is justly proud of the Denny-Renton industry, which is one of its leading industries. All the paving in Seattle is done with Denny-Renton brick and their sewer pipe were used in the sewers of the city.

The Hamburg Vitified Brick Co., of West Hamburg, Pa., has again resumed the manufacture of paving block. For the past five years they have made only brick for building purposes, but have now arranged to make the paving block, for which they have several large orders booked. Several large double block presses were installed and put in full operation and other improvements added.

PAVEMENTS ON OHIO STATE HIGHWAYS.

The State Highway Department of Ohio, which was organized in 1904, found a constantly increasing field of usefulness until, in 1909, by the aid of legislation increasing its authority and providing means of apportioning the expense, it was able to grant applications for the improvement of 53 roads in 36 counties. Contracts were entered into which amounted in the aggregate to \$534,945, of which the state contributed \$194,866, exclusive of engineering and inspection.

At first gravel and macadam were the only classes of construction. Macadam, however, has fallen into disrepute in the state, owing to its failure, as ordinarily laid, to meet present traffic conditions. It is still an open question whether some comparatively new system of road construction will supply the need or whether the paving materials that have stood the test of time in city streets will prevail. The record of the last two years' work of the Highway Commission will show what the tendency has been in Ohio.

In 1908 the contracts let amounted to 25.69 miles of ordinary macadam and 7.17 miles of brick pavement. In 1909 the figures were 36.09 miles ordinary macadam, 5.57 miles of tar or asphalt-treated macadam, and 20.45 miles of brick pavement. Incidentally it may be mentioned that the only increase in cost in the work done last year was met entirely by an automobile tax, which amounted to \$46,000. That the improvement of country roads with permanent pavements has met with general approval is evidenced by the fact that local county authorities have extended the improvements begun by the state entirely at their own expense. For instance, Portage County assumed \$64,913 for the construction of over six miles of brick-paved road, though the amount available from the state was but \$10,586. Fifteen counties that did not construct state aid roads in 1908 built them in 1909, an increase of 15 per cent.

FILLERS FOR BRICK PAVING.

The question of the proper filler for brick pavement is one that admits of much difference of opinion. The following was submitted to us for publication and in do-

ing so we leave the subject open for discussion by advocates of other methods:

The subject of fillers for the joints in brick and granite block paving is receiving a large amount of attention lately by discussion in trade papers carried on in the interest of various oil asphalts, and an entirely erroneous idea is being created as to the qualities necessary in such a filler and the objects of it.

A bituminous filler is used for two reasons: First, to prevent water soaking through to the foundation, and second, to allow for expansion and contraction, and to prevent bulging or cracking of pavements which sometimes occurs where an all cement filler is used. There is no other benefit from the use of a bituminous filler.

Neither pitch nor asphalt or any bituminous substance can give any support to the edges of the brick, although claims to that effect are often made and in fact protection is not required in a good quality of brick. A modification of the all pitch or all cement grout filler is the use of cement grout with the expansion joints of pitch. These joints are sometimes as wide as one and one-half inches along the curbs, and from three-eighths to five-eighths inch wide, between from three to seven courses of brick every twenty to fifty feet. These expansion joints must necessarily be wide enough to allow for the entire expansion and contraction in the sections grouted with cement, and are therefore much wider than would be necessary if all the joints were filled with pitch.

This extra width of the expansion joints results in greater wear on the pavement at those points and does not hold the pitch as well as if the joints were narrower and many engineers are requiring that the expansion joints be narrower and more frequent, instead of the one joint along the curb, and are requiring four or five from three-eighths to one-half inch in width.

Where all joints are to be filled with pitch, the brick may be set as close together as the lugs or letters will permit, giving just the proper surface to the street so that horses can get a foothold and yet not result in undue wear to the pavement. In work of this kind, the use of coal tar pitch for over twenty years, shows that pitch having a melting point, varying not more than five degrees either way from 135 degrees F., provides all the necessary qualities for a filler, and engineers should not be confused by statements about high melting points and low cracking points of other material.

What is required is something that will adhere to the brick. Coal tar pitch will do that, even when it is applied in unfavorable weather conditions, as it will become sticky enough the first hot days to adhere to the brick and serve its purpose.

The oil asphalts or mixtures of natural asphalt and petroleum oil, having a high melting point and large range of temperature between cracking and melting, must be applied under "ideal conditions" which are seldom or never obtained in practice in order to insure adhering to the brick.

In case such asphalts do not stick to the brick when applied it is very evident that they never will as the maximum temperature of the pavement in summer will not reach the softening point of asphalt. As evidence of this fact, it is a matter of common knowledge among contractors for brick pavements that in removing sections where these asphalt fillers have been used it is possible to throw the filler in one pile and the brick in another. A bituminous filler that does not adhere to the brick is practically no better than sand. In fact, many of the characteristics of the oil asphalts for which so much is claimed are a disadvantage.

MACADAM MAINTENANCE EXPENSES.

During the year ending Nov. 30th, 1910, it cost the state of Massachusetts over half a million dollars to maintain its macadam highways.

If these highways had been built of brick, they would have cost one-third more originally, but the maintenance cost would be practically nothing, so in a very few years the roads, had they been built of brick, would have represented less cost to the state and townships than the macadam roads, and they would have been more permanent and more satisfactory in every way.

BOOMING GOOD ROADS.

Paving business is reported to be exceptionally good in Ohio and all manufacturers there report heavy orders for both pavers and paving block. There is an evident concerted effort throughout Ohio to boom good roads, and whenever such plans are advanced, brick and paving block are generally being specified.

Our Ohio correspondent states that when the Board of Control of Columbus met a few days ago to award the contract for furnishing brick for street improvements there, the bulk of the contracts went to Portsmouth, O., paving brick and paving block manufacturers. Trimble and Nelsonville block were ordered for several thoroughfares.

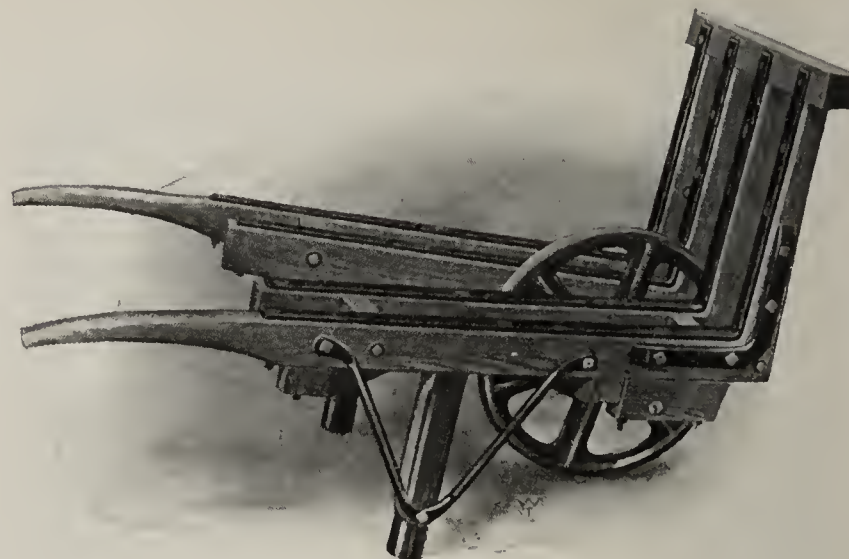
VICTORIA'S LARGE PAVING PROJECT.

The city of Victoria is now carrying out a great paving project. Thirty-six miles is the length of the pavement to be laid. The cost will be about one and one-quarter million dollars. Work was started on June 9 and will be finished by the first day of January, 1912. The area to be covered is 625,000 square yards.

A PAVING BRICK BARROW.

The Fernholtz Brick Machinery Co., of St. Louis, Mo., have made a specialty of a barrow for use in paving brick plants, capable of standing up under heavy loads of block.

The frame work of this barrow is made of 1 3-4-in. by 3-in. seasoned hickory, and the bed and back lined with 3-8 x 1 1-4-in. steel. The legs are strong in proportion and are braced from three sides with round steel rods. The wheel is 20 inches in diameter and has a half oval



Fernholtz Paving Barrow.

steel tile. The axle runs in wooden bearings, which can be replaced on the yard at small cost when worn.

This barrow is said to be built strong enough to withstand the roughest kind of work and is economical in repairs.



PERRYSBURG TILE & BRICK CO.

One of the prosperous tile plants, which have sprung up in Ohio to make use of the fine beds of clay and to supply the demand for drain tile there, is that of the Perrysburg Tile & Brick Co. at Perrysburg.

This plant was established in 1904, since which time various improvements have been added from time to time. The plant is situated on a tract of 25 acres of land underlaid with plastic clay, free from sand, which burns ware of a rich red color.

The machine room is a frame building, 34x60 ft. The three-tunnel drier is built of brick, three stories high and 160 ft. long. The upper floors are heated by hot water from a coil in the furnace. The lower floor is heated by hot air.

The clay is easily procured, near at hand, and is shoveled

The company has excellent transportation facilities, being located on the Toledo Terminal, it can readily use any of the 17 railways with which it connects. The yard track is graded down even with the kilns, so that the goods may be wheeled directly into the car, the switching being all done by the electric railway.

The officers of the company are: President, Geo. Munger; secretary-treasurer, C. H. Huffman; and general manager, J. H. Wilson.

RAINS BRING TILE ORDERS.

The Post Brothers, manufacturers of drain tile at Commerce, Mo., advise us that the recent heavy rains have resulted in the receipt of several good orders, which have been held up on account of the drouth. The filling of these orders has already made an extensive



Stock on Yard at Plant of the Perrysburg (O.) Tile & Brick Co.

by hand into Freese 1½-yard cars and hauled at once to the plant, where it is prepared for use in a roll crusher, of the Freese type, by the aid of a 35-ft. conveyor and it is taken to the Freese horizontal pugmill, where it is tempered. The Freese stiff-mud machine has a capacity of 18,000 tile or 25,000 hollow block daily. Two men tend the machine, taking the tile from the Fate cut-off table and loading them on drier cars, of which there are 90 triple deck and 40 single deck. These are at once transferred to the drier on transfers, of the Ohio Ceramic Engineering Co.'s make. After drying 36 hrs. the goods are set in the kilns, 11 to 14 courses high.

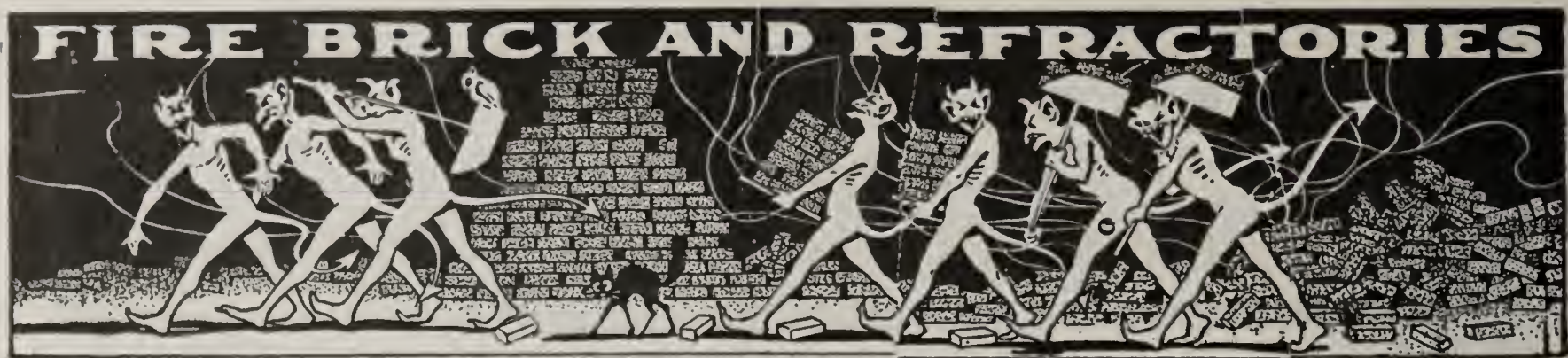
The kilns, of which there are four, are of the solid floor type, with flues under the floor. A 100-h.p. Westinghouse variable motor furnishes power to run the entire plant, which is run continuously throughout the entire year, hollow block and brick and 2½ to 12-inch tile being the only products manufactured.

inroad on their stock of tile. They say present prospects are that they will be busy from now until next summer.

This is an encouraging report and we trust the rains have brought equally satisfactory results to all our drain tile friends, and that the fall trade will be of sufficient volume to offset the dull summer season.

TILE USED IN GOOD ROADS.

In the general movement in favor of good roads, throughout the country, tile manufacturers will reap benefits as well as paving brick manufacturers, as an essential feature of good roads is good drainage and the principles of good drainage remain the same, whether the road be constructed of brick or other surfacing. Large drain tile are frequently used for culverts and smaller drain tile for draining low spots in the roadway.



PENNSYLVANIA NEWS.

Our Pittsburg correspondent advises us that refractory materials are moving fairly well there, but as the iron and steel mills are not running full, there is a slight shortage of orders from that source.

At Midland, Pa., the Pittsburgh Crucible Steel Co., a wing of the Crucible Steel Co. of America has begun the expenditure of \$7,500,000 in new furnaces and mills, the result will be a heavy demand for refractory materials from that source. The head offices of this company are in Pittsburg.

Bonds valued at \$10,080 are being retired by the Harbison-Walker Refractories Co., of Pittsburg, according to an announcement just issued by the Fidelity Title & Trust Co. These bonds fall due September 1.

Construction work has been begun on the new plant of the Renova Fire Brick & Clay Co., near Lock Haven, Pa. J. H. Baird has the work in hand.

Glenn R. McClintock, Pittsburg manager for the Osceola Silica & Fire Brick Co., has returned to his local office after an extended business trip to Chicago. He secured the contract for the brick to be used in the new plant being erected in the west by the Iroquois Iron Co., of which Julian Kennedy, of Pittsburg, is the constructing engineer.

The Manown fire brick plant which was recently destroyed by fire at Monongahela, Pa., has been rebuilt, and the capacity has been increased. The company is making a specialty of refractory materials, and is making special shapes for furnaces and other iron and steel requirements. The company is doing a large business.

A. R. Graham has formed the Pittsburg Silica Sand & Brick Co., at Pittsburg, with a capital stock of \$5,000.

The plant of the Eureka Fire Brick Co., at Mt. Brad-dock, has resumed operations after a brief idleness.

At Lock Haven, Pa., the Queens Run Fire Brick Co. closed down for a brief period in order to make a number of improvements to the property which will increase its capacity considerably.

PLANT REBUILT THROUGHOUT.

The plant of the Ashland Fire Brick Co., at Ashland, Ky., is being rebuilt according to plans made by the Trautwein Engineering Co., of Chicago. Electricity will be the motive power; a new power plant, grinding room and hot floor are being built; new kilns will be constructed and other up-to-date labor and fuel saving apparatus will be installed, which will make this one of the best fire brick plants in the country, and the quality of goods turned out will no doubt be even better than the high class goods heretofore made by this company.

CONDITIONS IN CALIFORNIA.

We are creditably informed that the fire brick business in California has been coming on in fine shape for the last six or eight months, but a new element is appearing in the situation there, which may knock the props from under the market. Many of the local pottery concerns have in the past turned

out something in the way of fire brick, many of the brands having high merit, and for some time, with demand and production about equal, fairly profitable prices have been maintained. The Livermore Fire Brick Co., which started up some months ago at Livermore, Cal., has been claiming a large volume of business, and occasional reports from Livermore have mentioned large orders for shipment to various parts of California, Oregon and Arizona. It is also reported that this company will install four new kilns during the fall. Apparently, however, the company has some surplus, as within the last few weeks it has been offering fire brick in the San Francisco market at prices considerably lower than those quoted by other manufacturers. The real reason for this policy has not yet been learned, but it seems to be causing no little anxiety to other manufacturers.

FIRE BRICK NOTES.

The Utica Clay Mining & Transportation Co. is the title under which a company has been incorporated at Springfield, Ill., by Geo. & Earnest Gleim, Otto and F. M. Drummond, of Utica. The company will build a railroad from the clay pits in Deer Park township to the factory of the Utica Fire Brick Co., of Utica, Ill. This road will cost \$20,000.

Trouble over the wage scale caused the employees of the American Fire Brick Co., at Mica, Wash., to strike some time ago.

The Livermore (Cal.) Fire Brick Co. has installed a 20,000-gallon capacity crude oil tank at its plant. The company is carrying out a number of improvements, including the laying of a track from the Western Pacific main line to connect with the Southern Pacific mine. The company will also install a 100-h. p. electric motor to furnish power for operating the plant.

After a shut down of six months, work was resumed some time ago at the plant of the United Fire Brick Co. at Connellsville, Pa. This company gives employment to about 150 men and it recently secured the contract for furnishing five million paving brick for road improvement in Washington County, Pa.

The Savage Mountain Fire Brick Co., of Frostburg, Md., has completed an addition to its plant, which has increased the capacity in a measurable degree. A new switch and other improvements have also been added.

The Spokane (Wash.) Asbestos Fire Brick Co., headed by J. M. Robertston, of Chicago, has been organized with a capital of \$100,000. This company expects to erect a plant costing \$20,000 for the manufacture of fire brick, fire box lining, etc. An auxiliary plant will be built at Kamiah, Idaho.

FIRE BRICK FAMINE.

A Portland, Ore., paper states that there has been a great scarcity of fire brick there, which has been relieved by the arrival of a cargo from Scotland. This looks as though there was an opening there for a fire brick factory, if the necessary clay is at hand. It seems strange it should be necessary for any fire brick to be shipped to this country from far-a-way Scotland.



NEW SEWERS FROM OLD ONES.

The following interesting information was furnished us by the Clay Products Publicity Bureau of Kansas City, Mo.:

The town of Columbus, Miss., can show a very low cost figure for sewer materials in at least one sewer job now in progress. On sewer contracts the average cost of the vitrified pipe is not more than 20 per cent of the total cost of the job. On ten recent contracts executed in



Clay Pipe Laid Over 30 Years Ago, in Kansas City, as New.

Missouri, it was as low as 17½ per cent; but on Columbus' latest sewer work it will not be more than a tenth of even this low figure.

Here is the explanation: Over twenty years ago, Columbus laid 15-inch vitrified salt glazed sanitary clay pipe in Second Avenue South. Today Second Avenue South has to be re-graded, consequently re-sewered; and, as us-



Broken and Disintegrated Concrete Pipe Taken from Sewers in Kansas City.

ual with larger pipe. At the same time other sewers are being built which require a 15-inch pipe. On these latter the low figure applies; for, in digging up the old 15-inch sewer that had done service for over 20 years in Second

Avenue it was discovered to be in absolutely perfect condition. Sand had not eroded it, sewer acids had not eaten it, the soil had not tarnished its smooth glazed surface. The very natural question arose, why not use it again. So this old pipe is scheduled for another long term underground, and the only material cost that can be figured against the new sewer will be the ten per cent or so that was broken in digging up and handling.

A similar exhibition of the lasting qualities of clay sewer pipe occurred a few months ago in Kansas City, when the Third Street sewer was brought to light after over 30 years. This sewer, for some unaccountable reason, was made partly of concrete pipe and partly of clay pipe. The relative condition of the two materials after this long time test was watched with great interest by sewer engineers. The ^{clay} city pipe was absolutely as good as new. The concrete pipe, notwithstanding the absence of any factory acids, was disintegrated and broken down. It was the breakdown of this part of the sewer, in fact, that started the excavations.

Kansas City might have established a low material cost in her next sewer contract by re-using the old Third Street clay pipe; but it was found not to be up to modern



Vitrified Pipe, Found to Be in Perfect Condition After 20 Years Service, at Columbus, Miss., to Be Relaid.

specifications. It must be remembered that the manufacture of clay pipe has advanced greatly in the last generation, and engineer's specifications have tightened accordingly. Thus the old Third Street pipe was found to be only semi-vitrified, or in other words merely hard-burned. Its glazing was not like present day glazing; moreover the sockets were not of the deep corrugated pattern used now. If soundness of the material of which it was made had been the only consideration, Kansas City might have done as Columbus is now doing, for the old clay pipe after 30 years' use was as sound as on the day it was burned. However, the resurrected pieces, piled in the yard, serve a good purpose, for they make a very interesting exhibit for investigating engineers.

UNGLAZED PIPE FOR SEWERS.

Certain manufacturers of clay sewer pipe have recently suggested the use of partially vitrified unglazed pipe, the best quality of such as is used for drains, for small sized sewers in place of the salt glazed pipe commonly used according to the following statements from the "Municipal Journal":

"This the manufacturers do not advocate, as we believe they consider it a backward step; but on account of the lessened expense of burning and the less number of pipes which would be rejected than when pipes are burned to more complete vitrification, the manufacturers would be able to sell it at 10 to 20 per cent less than the salt glazed pipe.

"The proposition was submitted by them to a number of city engineers and consulting municipal engineers throughout the country, and fully 90 per cent of these stated that they would not consider using the cheaper pipe for sewers. Most of them gave as the reason that the unglazed and incompletely vitrified pipe would be more likely to be injured by frost, worn by scour of the sewage and more pervious than the harder, vitrified pipe. How many of these merely



Ruined Concrete Pipe as Taken from Sewers in Kansas City.

assumed that the cheaper pipe would possess these disadvantages, and how many of them based their reasons on actual knowledge, we are unable to say. We imagine that with most of them the former was the case.

"In making this proposition the pipe manufacturers claim that the partially burned unglazed pipe is fully as hard, as strong and as impervious as cement pipe, that by selling it 10 to 20 per cent cheaper than standard pipe it would be as cheap as or cheaper than cement pipe, and hence should be accepted in place of it even where price is the principal inducement.

"We hope that some competent authority recognized as perfectly unbiased, such as the laboratory of an engineering school, will investigate this question thoroughly, making comprehensive tests and study of actual experiences with cement pipe, vitrified salt glazed pipe and the proposed unglazed pipe. There are few questions connected with municipal work more in need of definite determination at the present time."

We would be glad to have some comments from sewer pipe manufacturers as to the advisability of using the unglazed pipe as above set forth.

MODERN SEWERS IN CHINA.

Consul General Sammons, of Yokohama, reports that the authorities of the city of Tokyo have decided, before the opening of the exposition to be held in that city in 1917, to commemorate the fiftieth anniversary of the

crowning of the present mikado by installing a complete modern sewerage system modeled after that of western cities. As the area of Tokyo is one of the largest of the cities of the world, such a scheme would require many thousand feet of sewer pipe.

Several Americans have registered patents for the manufacture of such pipe in Japan, and in some cases are attempting to dispose of these patent rights to Japanese manufacturers. If the present scheme is adopted there would seem to be an excellent chance for the establishment of a successful business in Japan by the holders of such patents.

The clay necessary for the manufacture of terra-cotta sewer pipe is found in great abundance in certain parts of Japan, while the labor is so cheap as to make the cost of production small. Holders of American patents for the manufacture of such pipe may find it to their advantage to have the same duly registered under Japanese law.

The mayor of Tokyo states that \$17,000,000 to \$20,000,000 will be spent in this improvement, and that while Japanese experts have been sent to various parts of the world to examine the sewerage systems of the leading cities, the Tokyo system will be composite in nature, embodying the most suitable features of many cities. It is probable, however, that it will resemble the Berlin sewerage system in many essential features.

For additional information concerning this work, parties interested should refer to File No. 6,934, and address Bureau of Manufactures, Washington, D. C.

ONLY CLAY PIPE CAN WITHSTAND ACID.

The report of Wm. Bucholz, president of the Board of Public Works, and L. R. Ash, city engineer, of Kansas City, after a trip to Milwaukee, Chicago, New York City, Troy and Syracuse, N. Y., states that they found sewers of concrete pipe that had disintegrated after being in use only two months. Manufacturers of concrete sewer pipe told the officials that concrete pipe should not be used in districts where there are manufacturing plants using acids, as only clay pipe or vitrified brick can stand the acid.

COAST NEWS.

Sewer pipe manufacturers in California are greatly disappointed over the decision of the Supreme Court that the bond issue under which the Oakland sewer work was to be done is invalid. The contracts let for this work have accordingly been canceled, and several months will elapse before anything further can be done on this job. Considerable pipe is being shipped to other quarters, however, and several important contracts have recently been let in San Francisco.

GOOD INVESTMENT.

The citizens of Sulphur Springs, Texas, are pleased with the new \$25,000 brick and tile works recently established there, the demand for tile being greater than the plant can supply. The money which was invested in the plant is returning to general circulation through trade channels, and it is claimed \$20,000 has already been spread around in this way through the employment of labor at good wages.

Sewer pipe manufacturers in Ohio report a season of activity, and all modern yards there are on the active list. Here and there an idle yard may be discovered, but these properties are generally so "ancient" that business has been diverted by their owners to the more up-to-date property, at other places, under their control.



GENERAL POTTERY NEWS.

Although the story has been given out indirectly that W. S. George, president of the W. S. George Pottery Co. of East Palestine, Ohio, who is also concerned in the management of the Cannonsburg, Pa., Pottery Co., would take over the management of the Ohio China Co., at East Palestine, a denial has been made of such a business move. O. C. Walker, who has been in charge of the Ohio China Co., has retired from that position and has become identified with the industry at Sebring, Ohio. Stockholders of the Ohio China Co., wanted Mr. George to take over the plant, but so far he has held aloof from doing so. On the other hand the Ohio China Co., sought the services of Thomas Price, manager of the American China Co., at Toronto, Ohio, but like Mr. George, he did not care to sacrifice his business interests in Toronto to go to East Palestine.

Mr. George was looking over several of the East End plants of the Homer Laughlin China Co., and at once the story became rife that he would become interested in the pottery business in East Liverpool. However, there is no truth in this story.

C. H. McIntosh, who was in the office of the Ohio China Co., has been placed in charge of the management of the property until other arrangements can be made.

C. L. Gray, for the last eighteen years general office manager for the Goodwin Pottery Co., at East Liverpool, Ohio, has severed his connection with that company, and will become associated with the Charles Howell Cook pottery interests at Ford City and Kittanning, Pa.

Mertz Franzheim, a son of Charles A. Franzheim, of Wheeling, W. Va., who was formerly connected with the management of the Wheeling Potteries Co., and who was associated with Mr. Cook at the two Western Pennsylvania plants, has left that company and will hereafter become identified with his father in the sale of pottery supplies.

Mr. Gray is one of the best known pottery office managers in the western territory and has frequently been called upon to look over inventories and complete audits of other pottery concerns. His successor at the Goodwin plant has not been named.

Because they are reported to be dissatisfied with existing conditions, five pottery manufacturers at Crooksville, Ohio, who are identified with the stoneware trade, will remove their plants into the Zanesville territory. There is only one general ware pottery in Crooksville, and this is the Crooksville China Co., which is managed by Guy Crooks. All that the little town of Crooksville possesses is the pottery industry, and the removal of their plant will almost deplete the town of its population.

The Peerless Selling Co., of Evansville, Ind., has opened its new "Helfrich" pottery, the product of which will be sanitary specialties. When the pottery was opened, several hundred invitations were sent out, and two special cars containing Master Plumbers of Chicago responded from that point. This plant has a capacity of eight kilns, and is declared to be the best equipped sanitary pottery in the United States. After the visitors watched the process of making a lavatory from the raw clay, they were taken to the plant of the Peerless Tank & Seat

Works, as a side trip. The new plant is under the management of H. F. Weaver.

In order to test the commercial values of the large deposits of clays found in Sunshine Canyon, Boulder County, Secretary Eckel of the Longmont (Colo.) Commercial Association has sent a large amount to the potteries in the Zanesville, Ohio, district to be thoroughly tested. It is the ultimate purpose to build a pottery at Longmont, should the tests prove satisfactory.

Eighteen families from East Liverpool, Ohio, have gone to Athens, Ga., where the male members will be employed by the Athens Pottery Co., which will be under the management of Thomas R. Harsha and L. Auberger, who were formerly connected with the pottery business in East Liverpool.

The capacity of the John G. Burley Pottery Co., at Crooksville, Ohio, is to be increased. Another kiln will be erected and additional machinery will be installed.

It appears that the South is alive with the formation of new pottery concerns, for two additional corporations have been formed since potteries were recently located at Athens and Macon, Ga.

At Ragland, Ala., M. Bandas has formed a pottery company with a nominal capital stock, and it is said will attempt to manufacture a line of general ware from native clays.

At Benton, Ark., a new art pottery company is being formed, with a capital stock of \$10,000, with these officers: President, E. R. Norton; vice-president, J. M. Caldwell, and secretary-treasurer, C. F. Bush.

Several years ago an effort was made to build a pottery in Oklahoma, and after the foundation for the plant was completed, no other construction was attempted, the scheme proving a flat failure.

Although effort was made a number of times during the last four years to dispose of the plant of the Bell Pottery Co., in East Columbus, Ohio, only recently was David E. Putnam able to finally effect a sale. The Sanitary Earthenware Specialty Co., of Trenton, has taken over the plant together with 24 acres of land.

Officers of the Trenton company taking over the Columbus pottery are: president, Arthur Plantier; vice-president, John A. Moore; secretary-treasurer, Edw. T. Swetnam. This company manufactures all kinds of plumbers' earthenware specialties, one of its lavatories being quite well known in the trade. As the Bell plant was built for manufacturing domestic pottery, quite a number of changes will have to be made before sanitary ware can be made.

The Trenton Company was established in 1896, and since then it has more than doubled the capacity of the Trenton factory. Increased business caused the officials to consider opening a branch in the Central West, and Columbus was selected as a logical location. Mr. Swetnam will be placed in charge of the Columbus office, although main offices will continue to be maintained in Trenton.

The Bell Pottery Co., was formed in 1903 by William and Edward Bell of Findlay, Ohio, and although over \$200,000 was spent on the pottery, it was never a success. The sale of the plant, it is said, will not satisfy the bondholders, for the eastern people secured the property for a "mere song."



THEY WILL STAND COLD WEATHER.

The question frequently arises, in discussing the merits of sand lime brick, whether they will stand the severe cold weather of the north.

The accompanying illustration shows the product of the Silicate Brick Co. of Ottawa, Ont., in use in that cold country.

You will notice the snow is piled up around these buildings and we are told the brick seem to suffer no bad results from exposure to the snows and freezing during the long cold winters there.

COMPANY NAME SOLD.

With the sale of the name "Sand-Lime Brick Co." to C. L. Field, the concern which has been doing business since June 9, 1905, will soon go into liquidation. The plant at Owensboro, Ky., was destroyed by fire, but J. W. McCulloch, who owned 360 shares of stock, S. T. Rutherford, J. J. Lyne, R. L. Cornley and T. H. Manning, who held three shares each, continued business until recently, when negotiations were begun for the sale of the firm's name.

SUCCESSFUL METHOD.

We are informed that the International Sand-Lime & Brick Co., 90 West St., New York City, are about to put the factory of the Bay State Brick & Stone Co. in operation. This plant is located at Indian Orchard, near Springfield, Mass., and is said to be one of the most modern and up-to-date sand lime brick factories in the country.

The International Company is receiving many unsolicited letters from satisfied customers telling of their success in using the International's "Division Method," which is pronounced to be a very satisfactory method of making sand lime products.

Among the letters received by the International Company, is the following from R. L. Corley, secretary and manager of the Oklahoma Granite Brick Co., at Oklahoma City:

I wish to inform you that our brick, as made by the "Division Method," are the most superior brick I have ever seen, and at this time we are getting more than 75 per cent of all the facing brick business in this city, having just now 27 buildings under course of construction, using "granite" brick. Our business is coming to us on the merits of our product. After several years of practical work and experience in this business I am thoroughly convinced that the "Division Method" is the true way to make a sand-lime brick, that you can place in the competitive market and put them up beside the best of other brick and make them take a back seat every time on any test they want to put you to. This is our experience and others can do the same if they get started right.

The "Official Sand Lime Bulletin" makes the following statements as to the relative cost of brick and frame houses:

"The brick house is much cooler in summer than the frame house, and we have tested the heating in winter and have found that it takes 33 1-3 per cent more fuel for a frame house than it does for one of brick.

"Cost as compared with frame:

"For brick veneer, add not over 5 per cent.

"For 9-inch hollow wall, add not over 8 per cent.

SAND LIME NOTES.

We are told that the Tift Silica Stone & Brick Co., of Albany, Ga., are adding a sixteen-mold rotary press to their outfit.

The Progressive Brick Co., Heed Building, Filbert street, Philadelphia, are reconstructing part of their factory, and we understand are installing a wet pan and rotary press for high-grade face-brick.

The Golden Gate Brick Co., of California, report business improving daily.

The Schultz Brick Co., of Brantford, Ont., report sales equal to last year, and prices better.

We are advised that the National Pressed Brick Co. of



Residence in Ottawa, Ont., Built of Sand Lime Brick Which Successfully Withstand the Cold Winters There.

Detroit, Mich., have contracted for a wet pan and rotary press.

One of the German sand-lime brick plants has a daily capacity of 350,000 brick.

Messrs. Reincke & Schmeck, formerly of Saginaw, Mich., are putting the United States Brick Co.'s plant at Michigan City, Ind., in first-class shape, and will soon be ready for business.

The New England Brick Co. of Farmington, Conn., began operations some time ago, and report large orders already in hand.

An exchange states that "The manufacture of sand lime brick is a twentieth century industry. Beginning with the production of a few thousand bricks in 1901 at Michigan City, Ind., it has developed rapidly in the United States, and the product seems to have stood the tests of the laboratory and actual use.

THE PULSOMETER AS A PUMP.

The types of pump with which most engineers are familiar, and which are generally used in power plant practice, are the ordinary reciprocating pump and the centrifugal pump. There is, however, another type of pump which is found in a number of power plants, but which is not so generally known. This is the "Pulsometer." For certain classes of service it has a great deal to recommend it.

It seems rather peculiar that this pump has been lost sight of, as it might be called the present day representative of the first type of engine successfully put into operation, since it works very nearly upon the same principle as the pumping engines designed and operated by Newcomen.

Before pointing out the special advantages of the pulsometer, it might be well to briefly describe its operation.

Fig. 1 gives a general idea of the external appearance of the pulsometer, and Fig. 2 shows its internal construction. From these illustrations it will be seen that the pulsometer consists of a hollow one-piece casting, having two bottle shaped chambers AA, with their necks communicating at the top, and each opening into an outlet chamber O, through a check valve. An air chamber J connects with the suction inlet and serves to cushion the incoming pulsations.

The operation of the pump is as follows: Steam from the boiler is admitted to the top of the pump and enters either the right or left hand pumping chamber A, depending upon the position of the steam ball valve at the top. Assume that the left hand pumping chamber is filled with water. The pressure of the steam depresses the surface of the water without agitation, forcing the water out through two check valves and into the discharge pipe H.

The moment the water falls to the level leading to the discharge chamber, the even surface of the water is broken up, and owing to the peculiar design of the pumping chambers the water and steam are thoroughly churned up and brought into intimate contact, causing instant condensation of the steam. This forms a vacuum in the left hand chamber, which, assisted by a slight upward pressure in the right hand chamber, immediately pulls the steam valve over to the other seat, shutting off the steam supply. The vacuum now draws in a new charge of water through the suction pipe. While the chamber is filling up, the right hand one is emptying by a process similar to that just mentioned. It will be seen that the action of the pulsometer consists in alternately emptying and filling the pumping chambers. These operations continue so long as the pump is supplied with steam and water. These alternations follow so rapidly and with such regularity, that the stream of water leaving the discharge pipe is practically continuous.

Each pumping chamber is provided with an inwardly opening air valve, which draws in a supply of air every time a vacuum is formed in either chamber. This air

forms a layer on top of the water, forming a sort of piston which keeps the water and steam from coming in contact too early in the operation. This layer of air also serves as a cushion to deaden the shock of the intruding water.

One of the things that recommends the pulsometer for power plant work is its simplicity. It will be noted that there are absolutely no mechanically operated parts, and that the whole process of emptying and filling the pumping chambers is entirely automatic. Furthermore, the pulsometer is lighter and cheaper than any other type of pump of similar capacity.

At first thought, it might be deemed that the pulsometer is rather uneconomical in operation, but it has been proved that an average duty of 15 million ft. lb. per 100 lbs. of coal can be obtained and tests have shown a duty of over 23 million ft. lb. When it is considered that the ordinary reciprocating pump very seldom shows a duty exceeding 15 million ft. lb., it will be seen that the pulsometer compares very favorably with this class of pump. In fact it is not much different from them, because the ordinary reciprocating pump takes steam for full strokes and exhausts it very nearly at the pressure at which it was received. In the pulsometer, the air mentioned above serves as a piston, steam follows the water for the full stroke, but here the pulsometer has an advantage over the reciprocating pump, for after making use of the full pressure of the steam, condensation ensues and a new charge of water is drawn in by the vacuum thus formed. It might be said that the pulsometer makes the steam do double duty; first, in pushing the water out; then by condensation for sucking in a new charge.

The fact that the pulsometer absolutely needs no foundations, in that it can be hung up from beams or suspended by a rope has caused some engineers to have one



Fig. 1. Pulsometer in Use.

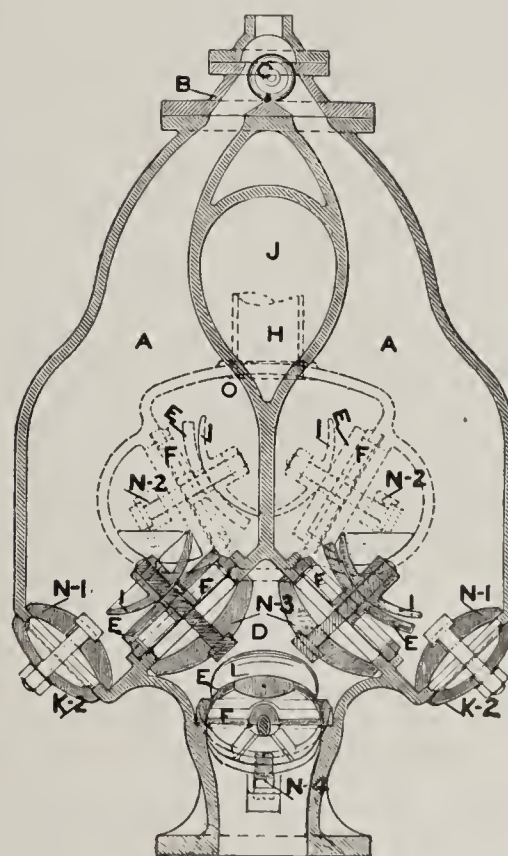


Fig. 2. Sectional View of Pulsometer.

around and use it for almost any service that an emergency calls for.

The pulsometer is built in a number of sizes ranging from a delivery of 20 gallons per minute to 2,000 gallons per minute, and is manufactured by The Pulsometer Steam Pump Co., 17 Battery Place, New York City, who will gladly furnish further information.

RAYMOND EQUAL ROLL CRUSHER.

An innovation in roll crusher construction has been placed before the brick making world in the new machine marketed by the C. W. Raymond Co., of Dayton, Ohio.

In its general design, in its massive construction, in its dependability, it vies with all of the Raymond productions, being thoroughly capable of withstanding the heavy impact of crushing while running at high capacities. Made, as it is, to meet the ever increasing demands for large quantities without sacrificing the quality of the machine or its product, its framework is made staunch, rolls heavy and true, bearings generous and shafting strong.

The framework of the "Equal Roll Crusher," is built up of two immense side frames, thoroughly secured by heavy stretchers and through-going bolts and large end frames, thus uniting it into one compact superstructure, giving it the rigidity so necessary to the success of a machine of this character.

These side frames are designed, each with one solid bearing which supports the stationary roll, holding it rigidly in position, allowing the impact to be taken against a section of the machine which has no moving or adjustable parts to break. This bearing is made with an oil reservoir, keeping it sufficiently lubricated to prevent heating and undue wear. Furthermore, this boxing is set angular so that the strain does not occur on the belts, but against the solid bearing. In addition, these boxes are braced to the remainder of the framework, so that the strain is absorbed throughout its entirety, allowing no undue work to be performed by any one part of the superstructure.

The adjustable roll is held by two massive bearings, sliding in the frames and secured in their position by two sets of screws on either side, and locked by forged nuts. The movement of these nuts allows the adjustable roll to be brought as close to the stationary roll as may be desired. Heavy springs relieve the impact on this side and allow the passage of hard foreign substances without detriment to the machine.

Both rolls are fitted with chilled, replaceable wearing faces, ground to true circles and balanced, thus decreasing the vibration of the machine and adding to its longevity, while the fast or stationary roll is provided with a fly wheel to insure its steady operation.

A new and novel feature of the equal roll crusher is the scraper arrangement. On the adjustable roll the scraper is fastened to the bearing boxes so that it will follow the roll when it is set to position and does not require a second adjustment of this part. Both scrapers are pivoted and held against the face of the rolls by means of counterweights, keeping them constantly in contact.

It may readily be seen that every unnecessary part is eliminated, thus minimizing the likelihood of breakage, while every device is added which is conducive to convenience and perfect work.

The specifications are: Length, over all, 7 ft. Width, 6 ft. Rolls, 30 inches in diameter by 14 inches face. Pulleys, slow roll, 16 inches by 10 inches, 400 R. P. M., fast roll, 18 inches by 14 inches, 500 R. P. M. Approximate weight, 8,500 lbs.

Fire caused a loss of about \$1,000 at the plant of the Globe pottery in Crooksville, when large straw and warehouse sheds were destroyed. Fifty tons of straw were burned, the loss being only partially covered by insurance.

NEW FEATURE OF THE GANDY BELT.

The Gandy Belting Co. of Baltimore, sole manufacturers of the Gandy Belt, in the United States, have adopted a novel as well as an entirely original idea for distinguishing the "Gandy Belt" from other stitched cotton duck belts. Commencing September 1, 1911, one edge of the Gandy belting will be painted green, while the rest of the belt will remain red as before, and it will continue to bear the brand "The Gandy Belt," and their trade mark, a coil of belt and a bale of cotton laid across it, printed upon the belt at intervals throughout the entire length of the roll.

The Gandy Belting Co. explains that this step was made necessary because some unscrupulous competitors have endeavored to imitate their belting in appearance, color and texture.

It came to the notice of the Gandy Belting Co. that some dealers were palming off on their customers other belts, made in imitation of the Gandy belt, in this manner defrauding the customers of the Gandy Belting Co. by giving them belting that they had not ordered, and did not want and not furnishing them the belting they did want, and at the same time defrauding the Gandy Belting Co. of sales. To put a stop to this, the Gandy Company found it necessary to institute legal proceedings to check the fraud, and at the same time to educate their customers to know their goods. These suits were instituted in the United States Circuit Courts in Chicago, Pittsburgh and Cincinnati, and in all of these cases the Gandy Belting Co. obtained decrees, sustaining their rights and enjoining the defendants from selling or offering for sale any belt not made by them as and for the Gandy belt.

The Gandy Belt has always had two distinctive marks, the words "The Gandy Belt," and the trade mark. Some makers of inferior belts placed on the market stitched cotton duck belting without any brand whatever, and these belts have resulted in much fraud and substitution. To stop this injustice the Gandy Belting Co. has added another distinguishing feature to their belt that will enable those desiring or specifying the Gandy belt to see at a glance whether they are getting it or not, as one edge will be painted green, while the rest of the belt will remain red, as heretofore, and will contain their trade mark as heretofore.

The foundation of the Gandy belt is a very heavy cotton duck, woven in the duck mills of the Gandy Company. The sewing machines on which the belts are stitched are built in their own machine shop, and have features possessed by few sewing machines, in that they stitch with an imbedded stitch, making the surface of the belt smooth and holding the plies solidly together. The belt is then treated by a secret process, which renders it water, heat and steam proof.

The Gandy belt is thoroughly stretched and seasoned before leaving the factory. It is uniform in width, runs straight and true, and will not slip or harden.

HEADQUARTERS AT KEOKUK.

The Scott Madden Iron Works Co. have closed their St. Louis office, and are concentrating their business at Keokuk, where they request that all communications be addressed to them. In addition to dry press machinery, the company also manufactures steam shovels and dredges at Keokuk, and are selling the Madden line of stiff mud machinery, manufactured at Rushville, Ind.

They have just issued a catalog describing fully the various lines of clay-working machinery which they make.



Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers— Market Fluctuations and Industrial Prospects

SPARKS FROM THE WIRE.

The Davenport Clay Mfg. & Development Co. has been originated with a capital of \$500,000 at Port Jefferson, N. Y. The incorporators are E. A. Resar and M. J. McLeod, of New York City, and F. B. Doe, of Brooklyn. The company will deal in brick, tile, etc.

The Porter Brick Co., which operates a brick yard at Ambau Station, on the Western Maryland Railroad, Pa., has bought an additional tract of eight acres of land near the present plant for \$700. The brick company is doing a thriving business at present.

J. H. Murphy, who formerly owned the Salem (Ore.) Tile Works, is about to build a tile factory at Albany, Ore., where he has found clay which he thinks has the properties necessary for making tile.

T. L. Millard, of Huntington, W. Va., is at the head of a new concern which will construct a brick plant there with a capacity of 100,000 brick per day. Machinery has already been ordered for the plant, which will be located on the Holderby Farm on 16th St. Road. The title of the new company will be the Huntington Clay Products Co. Paving brick will be the chief output of the plant. The buildings of the plant will be fireproof and Youngren continuous fired kilns will be installed.

The Hamilton Clay Mfg. Co., of Carthage, Ill., has increased its capital from \$75,000 to \$100,000.

The board of town trustees of Livermore, Cal., have deeded a ten-acre site to the Livermore Fire Brick Co., carrying out a pledge of the citizens, made several years ago, to the effect that when the brick plant had been in continuous operation for a year the site would be deeded to the company.

The Potomac Fire Brick Co. has been organized at Piedmont, W. Va., to manufacture brick, tile, pipe, pottery, etc. The authorized capital is \$50,000. The incorporators are M. K. Tierney, W. S. Smallwood and B. H. Parsons, of Piedmont; John P. Miller, John Mackie and M. A. Patrick, of Westernport, Mo.

A new brick plant is contemplated for Wellsville, Utah, where a fine body of clay has been found, which upon testing is found to make buff colored brick, which are very popular in the East.

Former State Senator Cyrus E. Davis has bought the controlling interest of Elmer E. Neal in the Bloomfield (Ind.) Brick Co.

The state school of clay working and ceramics of Alfred University, New York, will exhibit a collection of clay wares, showing the work of the students in clay testing and modeling, at the State Fair. Besides the well-known red brick of the Hudson River, there will be shown specimens of fancy and front brick of various colors, as well as fire brick of high refractory test. Two large panels of architectural terra cotta will also be shown; one representing the seal of the state of New York and the other representing the arms of New York City. Sewer pipe, tile, fireproofing, brick, roofing tile, stove linings and furnace fittings will be included in this interesting and instructive exhibit.

A brick and tile dry kiln will be built for the Treiter Piano Co., of Marinette, Wis.

Specimens of 18 and 30-inch sewer pipe—the latter said to be the first pipe of that size made from Iowa clay—have been made at the new \$250,000 plant at Webster City, Ia. These pipe were made from clay shipped from the company's clay beds at Lehigh, Ia.

Owing to the high prices prevailing on building materials at Adelaide, South Australia, the government there

is considering a scheme for the manufacture of brick to supply the demand for building material.

The Crescent Unit Brick & Tile Co. at Schenectady, N. Y., has changed the number of its shares of stock from 100 shares of \$100 each to 400 shares at \$25 each.

The Pomona (Cal.) brick yard has increased its output from 1,000,000 brick a year to 500,000 brick a month to meet the unusual demand for its product.

The Miles Tile Manufacturing Co. is the title under which a company has been incorporated at Los Angeles, Cal., with a capital stock of \$60,000. The directors are Geo. F. Miles, F. M. Sawyer and F. A. Lake.

We are told that the Webster City (Ia.) Brick & Tile Co., the stock of which is owned by the C. W. Soule family, has sold its big plant, yards and other property in that city to B. H. Ward, of Albert Lea, Minn. The deal involves upward of \$150,000.

Mount Union, Pa., is to have a new silica brick plant to be erected by a new company which has organized under the title of the Mount Union Refractories Co. Among the stockholders are: Rembrandt Peale, of New York, and C. V. Hackman, of Mount Union. The new plant when completed will have a capacity daily of 80,000 brick and will employ 400 men.

The Bayview Brick & Tile Co. has been organized at Bay View, Wash., by C. B. Mayhugh, of Demos, Ohio, and H. B. Elliott, of Bayview. The object is to develop a fine bed of clay there.

The Goshen (Ind.) Brick Co. has secured an option on a tract of rich clay land near Goshen, in Elkhart county. The clay has been tested by an expert sent out by the Government and pronounced of a superior quality for making fire brick and pavers.

The F. Crouz tile mill, at Huntsville, O., burned to the ground recently. Loss \$4,000, with \$1,000 insurance. Incendiarism is suspected.

The Clay Products Co. is completing plans for the erection of a big terra cotta manufacturing plant near Spokane, Wash. The plant will cost in the neighborhood of \$230,000 and will give employment to fifty men. The company has secured ten acres of land for a factory site and expects to begin construction work in the near future. John G. Short is president of the company; Andrew Laidlaw, well known Spokane capitalist, and a number of other local capitalists are backing the project and are said to have arrangements for the building of the big plant almost finished.

The Clay Products Co., of Parkersburg, Pa., has been organized to manufacture clay building materials. The capital stock is \$5,000 and the incorporators are T. J. Wetherall, R. L. MacFarland, John B. Payne, John Marshall and Edward B. Neal, all of Parkersburg.

The Art Tile Co., with John T. Ballard, president, W. G. Smith, vice-president, and M. Macies, secretary, has been formed at Mobile, Ala., to succeed the National Mosaic Tile Co., Floor tile alone will be manufactured by the new company.

SENSATIONAL EASTERN MARKET CONDITIONS.

New York, Sept. 11.—Almost unheard-of market conditions are prevailing in the Metropolitan district, at the opening of the last third of the building season. As far as sales are concerned, only twenty-eight barges went out last week, as compared with seventy-five for the corresponding week last year. Prices, however, are higher this year than last. The current quotations are \$5.87½ to \$6.25, dock, New York, whereas, last year, the quo-

tations for the week ending September 3, ran from \$4.75 to \$5.00.

Dealers, in this city alone, have sixty-four cargoes in reserve. These twenty-two million brick have been lying on call for from three to six weeks and practically every sale now made is to add to this supply. It is said that this is the first time in many years that winter tactics have been applied to summer business, which would seem to indicate that building material interests firmly believe that the fall movement, throughout the entire district, will not only be heavy, but will be well sustained.

This vast quantity of common brick represents shipments from only one manufacturing center, namely, the Hudson River district. It does not include any of the tremendous brick movements now being made by the Raritan River and Hackensack producers, so there is more than ordinary significance in a policy, almost universally adopted, that dictates the purchase of seventy-eight cargoes in one week, namely, that of August 12, merely for storage purposes.

It was, of course, apparent to any one in touch with the common brick market and who knew of the impending fluctuation upward, that the dealers saw a chance to take advantage of a sharp rise, but it would have taken more business sagacity than most dealers possess in a poor building year to have gone blindly into the purchase of common brick in almost unheard of quantities, merely to take advantage of a shift of a quarter a thousand. The fact is, that the building material interests throughout the east have plenty of assurances that this tremendous reserve will be taken care of by increased demand within a reasonable time, that is, within ninety days.

What is true of common brick has also been noticeable, though to a more conservative extent, in other lines of building material. Lumber, lime and plaster, cement and stone, have all been purchased in larger quantities than usual at the opening of the fall season. The American Lumber Co., for example, is in receipt of orders from New Jersey, Connecticut, Queens and Brooklyn retailers for 900,000 feet of pine, 300,000 feet of hemlock, 650,000 feet of oak trim and flooring and about 100,000 of miscellaneous material, all for immediate delivery (thirty days) and concessions have been waived for quick shipments.

With a liquidating stock market and building money plentiful, as is usual, by the way, just prior to the opening of a Presidential campaign, when the security of stocks and certain bonds is sometimes more or less uncertain; big manufacturing companies are at a loss to understand this movement, but they seem to be reassured, because of the terms of the new business, most of which is taken on short credits and with few concessions, and because the distributors themselves have been able to prove to them that their action is well warranted by pending business.

In the fall of almost every year, save that of 1909 and 1901, brick manufacturers have had their sheds full and were beginning to figure on a good time to shut down. Not so, however, this year.

The fact that labor is becoming scarce, up the Hudson, is a source of concern instead of the usual matter of indifference, on the part of the manufacturers. The fact is, that so well regulated have been the shipments to this market this year that the sheds are not anywhere near as full as they were last year, when, it will be recalled, a tremendous supply was carried over the winter. The sudden raid upon the storage sheds of the manufacturers by the local and New Jersey retailers two weeks ago, has left many of the manufacturers, within the combination, in a somewhat tight place regarding shed supply, and it undoubtedly will be a case of prolonging operations to a date considerably later than the allotted time set during the first of July.

For the first time an estimate was obtained this early in the season regarding the shed capacity that will be carried next winter. Not more than 150,000,000 will be stored, according to present plans. Estimates are now being completed from sales statistics for the last ten years with the idea of striking an average on which to base the storage figures for this year and it has been tentatively fixed at the figure stated.

It is the intention of the directors of the controlling

factor in the situation to correct the usual winter ailments of the trade. It is probable that the winter price will be fixed at a figure somewhere around \$5.25 a thousand and will be held steadily at that level all winter. This will check kiting tactics on the part of distributors and, if the theory works out in practice as well as brick experts believe it will, it should develop a uniform demand and prevent wholesale stacking. This will give the controllers of supply ample opportunity to gauge the demand from this center and not only insure the manufacturer a steady price for his commodity, but also provide the ultimate purchaser with a stated price upon which he can figure without fearing sudden fluctuation.

The Raritan river clay working industry is having one of its most active seasons. This center includes the kilns of the Atlantic Terra Cotta Co., the New Jersey Terra Cotta Co., the Mauer Brick & Tile Works, the National Fireproofing Co., the Sayre & Fisher and other brick yards in the South River district, and the Boynton Tile Works. In every one of these branches of the clay working business, factory capacity is being operated to meet the increasing demand from New York and Newark, N. J. In the latter place, more requirements are being received for common and front brick than at any corresponding period within the last six years and as for terra cotta, whether it be fire proofing or architectural, the bulk of the business taken by these manufacturers outside of New York City, is coming out of the East Jersey center.

One reason for this improvement is the practical completion of the Hudson and Manhattan high-speed transit service from New York City, under the Hudson river and Bergen hills, over the Hackensack meadows to the heart of Newark. This has stimulated an eleventh hour building movement, different from the speculative residence construction movement, that has featured the spring and summer in that vicinity. Two theaters are being built, mostly of steel and clay-brick and terra cotta, both architectural and fireproofing, several office buildings and bank structures are projected, not to mention a high-class apartment house movement in the so-called Hill section. Here, then, is where the bulk of the vast volume of burned clay orders is going as far as New Jersey is concerned. It is a tangible evidence that clay products publicity has handsomely paid the enterprising companies which have followed it up aggressively and generously as regards appropriation.

In fact, the writer has reliable information from a very high cement authority, to the effect that the startling growth in popularity of architectural and fireproofing terra cotta as a substitute for structural concrete, is responsible, in a large measure, for the marked falling off in demand in East Jersey, for this material during the present season.

Building statistics, from seven of the largest New Jersey centers, show a great increase in the number of terra cotta block dwelling operations, the estimated increase for Newark and suburbs being fixed by an official of the Newark building department at 18 per cent over last year and 39 per cent over the year previous. The increase in orders received this year by the National Fireproofing Co. over those of last year, for fireproofing terra cotta of all kinds, was estimated at 11 per cent, and the season has not yet closed. Much of this increase was attributed, by a high official of the company, to the widespread publicity given to this material during the hearings on the New York building code revision, during which the cement interests worked so aggressively for recognition that the building public's interest was aroused in this comparatively new building material. They sent for information and were convinced of the superiority of this material over concrete, and specified it.

While the foregoing figures are merely estimates, given to your correspondent by a member of the company named in advance of complete compilation, they serve partly to indicate the tremendous gain being made in this type of material for building construction of all types. It is a fact that cement prices have steadily declined during the present season, and because of a falling off in demand, many of the leading plants are now closed down either temporarily or indefinitely, owing to over supply in the storage sheds.

The most important announcement made since the

opening of the fall season is that the Aldridge Brick Co. plans an extension to its property and to its plant capacity. The Aldridge Company is located at Dutchess Junction, an important brick making center, and it has bought the Brower farm near its property in Wappingers. It was stated that the Aldridge Company was forced to take this property over to prevent a New Jersey company from entering the Hudson river field.

Since the organization of the Greater New York Brick Co., one New Jersey company has been prospecting, along the Hudson for a desirable location so as to be able to compete with the new company on its own terms in quality and cost of production. This company's plans, according to one of its directors, have not been entirely frustrated, but it is possible that nothing now will be done in the way of acquiring additional property until after the first of the year, owing, it was stated, to a flaw in the title of another site it has selected, which cannot be completely searched inside of four months, owing to the fact that most Hudson river properties were originally ceded by royal grants made in the Colonial times.

The property at Wappingers was slightly developed by the Wappinger Falls Brick & Sand Facing Co., but for several reasons it has been on the market for sale for two months. It is significant that the purchaser of the Wappinger property is not only identified with the Greater New York Brick Co., but that Aaron A. Aldridge, one of the main factors of the concern, is the vice president of the New York concern. It is planned to make the capacity of the Aldridge Company, already one of the largest on the river, equal to any plant in the East.

As the beginning of a campaign against lawlessness among the brick yard workers in lower Dutchess, Frank A. Brockway, proprietor of the Brockway brick yard, near Fishkill Landing, was appointed a deputy sheriff. This is the second appointment of brick yard proprietors made recently. The other appointee was Lewis Aldridge.

There has been some trouble at the Brockway yards from time to time and as a precaution against any serious outbreaks, Mr. Brockway was appointed a deputy sheriff.

PROSPERITY AT HAND IN INDIANA.

There is said to prevail, throughout the state of Indiana, a feeling that the end of business depression is at hand. While it is not expected that prosperity will return all at once and swoop down like a Kansas cyclone there is a general feeling that the bottom of the ladder has been reached and that the trend will now be upward. There is a healthier tone apparent in all lines of manufacturing, mining and business. The late rains have saved the crops and few crops in any part of the state have suffered.

At Brazil, Ind., the manufacturing plants are in a healthy condition. There has been a gradual improvement in trade for some time there which is becoming more pronounced. Brazil clay factories are with few exceptions working full time. The Brazil Fence Co. is working steadily with new orders coming in in a gratifying manner. The Crawford & McCrimmon Co. has a full force of men at work and are running their works day and night to meet the demands. This company reports many new orders and more than the usual number of inquiries being received.

SEATTLE NEWS.

A well and favorably known brick manufacturer of Seattle kindly supplied us with the following interesting letter:

The demand for brick as far as Seattle is concerned is very slight. The men who have made this matter a study contend that at the present time we are using in Seattle seventy-five per cent less brick than we were using a year ago. The production having increased at least forty per cent, it can easily be seen that were it not for the outside demand for brick, Seattle, as far as brick makers are concerned, would be in a deplorable condition.

We have been informed that the Hill Brick Co.'s plant in Seattle has been closed down permanently. The heavy regrades which are now in operation around and in the vicinity of their yard was the cause. The other yards are operating in a half-hearted manner, not having any inducement to push the production of their

wares. Mr. I. M. Neutzal, president of the Ballard Brick Co. is negotiating with some parties to take over his yard. If this arrangement falls through he has plans for the future to begin the operation of the yard himself.

The Queen Brick & Tile Co., which took over the Steele & Steele plant of Vashon Island, are contemplating the installation of a continuous kiln.

The Knapp Brick & Tile Co., which is pretty close to Everett, are installing a line of machinery which they have purchased from the American Clay Machinery Co. They expect to be in good shape for next season's business.

The Coast Clay Co., situated at Bellingham, whose manager is W. A. Doyle, are installing a dry press, which they purchased from the Seattle Brick & Tile Co. of Seattle. We have been informed by their manager, Mr. W. A. Doyle, that he has arranged with Mr. S. J. Geijsbeek of Portland, to draw plans for additions to the small plant which they have already installed. They have a very superior shale here which burns a very deep rich red. Mr. Doyle is very optimistic as to the future success of this venture.

The Denny Renton Clay & Coal Co. of Seattle, which was awarded the contract for all the brick, terra cotta and hollow wall partition block for the new Franklin High School of Seattle, are building an additional set of muffle kilns at their Van Asselt plant. This company has also increased its already very large holdings in Oregon by purchasing the Diamond Brick Co.'s plant at Vancouver, Wash. This will make them undoubtedly one of the largest manufacturers of clay products in the world.

The brick market is very good in Oregon at all points, the manufacturers all claim that they have large orders, and when the rainy season starts there is liable to be a shortage, according to Mr. Shaw of the American Clay Machinery Co. The conditions in British Columbia have not changed materially.

We understand the Fraser River Brick & Tile Co. has changed superintendents. Mr. King, lately of the Lake Union Brick Co., is to take charge of this plant.

W. C. Mitchell is hard at work on the new sewer pipe and press brick work at Abbotsford, which he is installing for the Norton, Griffith Construction Co. This company is reputed to be one of the largest building constructing concerns in the world.

The Wentworth Brick & Tile Co. of Albany, Oregon, whose superintendent is W. E. Overton, has been having the most successful business of its career, which is very flattering to Mr. Overton's management. Mr. Overton was formerly with the Builders' Brick Co. of Seattle.

We understand that the Rogue River Electric Co.'s holdings have been purchased by some large Eastern concern. This plant is equipped with machinery made by the American Clay Machinery Co.

The Granger Brick & Tile Co. of Granger, Wash., has made arrangements to put in an 18-chamber continuous kiln, for which plans were furnished by the Builders Brick Co. of Seattle. W. T. Houlahan, general manager of said firm, is to superintend the construction of same. This company has also been doing good business and has a great future in store for it.

The demand for brick and clay products in Eastern Washington has been very unsatisfactory, so much so that the Washington Brick Lime & Sewer Pipe Co., the largest concern in that part of the country, has been unusually active hustling for outside business, even going so far as Vancouver, B. C., for same. Their terra cotta department, which is superintended by Mr. Phillips, who was formerly with N. Clark & Sons of San Francisco, is in a splendid condition. They have also been getting better results in their sewer pipe manufacture since a slight change has been made in their material.

Mr. J. L. Bass of Rome, Georgia, an old-time brick-maker, is investing heavily, both in Eastern and Western Washington.

PACIFIC COAST NEWS.

San Francisco, Sept. 10.—Building work is still coming out in very good shape, although there has not been quite as much activity for the last two or three weeks as for the month previous. One favorable indication is that contracts have been let during the summer for sev-

eral buildings for which plans were drawn many months ago, and which have been figured a number of times. The final placing of such jobs is believed to signify a better financial situation, and it is certain that the new work planned is being carried out more promptly than for some time past. Small buildings still constitute the bulk of the business, but the architects have even more plans under way than last month, and increasing activity is predicted for the early fall months.

The announcement of a definite site for the Panama-Pacific Exposition has already been of some benefit to the building trades, as owners of property in the vicinity of the site are anxious to make improvements. The laying out of the grounds and the planning of the Exposition buildings will doubtless require considerable time, and it is not yet possible to tell anything about the materials to be used. The intention, however, is to make as many of the buildings as possible, of a permanent nature, and it is believed that, in connection with the Exposition, plans for a civic center at Van Ness avenue and Market street, including several permanent buildings, will be carried out.

Preparations for the Exposition have brought out a "get-together" spirit in many lines of trade, and there is more prospect of united action in the brick industry than for several years past. Ever since the first of the year fairly harmonious conditions have existed among the leading common brick manufacturers, and there is now a movement under way to bring about a general organization of the clay working interests, preliminary plans for which were outlined at a meeting held early this month.

Those most interested in this movement are now endeavoring to get in touch with similar organizations in the East, and in another month, it is hoped, the association will be in working order. The principal work to be undertaken, at present, will be the endeavor to extend the use of clay products as the best of building materials, and methods already successfully tried in other parts of the country will be used. One of the principal benefits of the Association, however, will be a more friendly feeling among the manufacturers.

The common brick market is steady at the price last quoted. A slight decrease in demand is believed to be only temporary, and the various plants which ship to San Francisco are disposing of their entire output without difficulty, though they are not as heavily overloaded with work as last month. So far, conditions are very favorable for the maintenance of the present price for the remainder of the year, and with plans for the Exposition taking shape, the market should continue in good shape for several years to come. The statement is frequently made that there is no money in brick at \$7.00 per M. f. o. b. San Francisco, but this price is at least much better than that of last year.

The Vallejo Brick & Tile Co., whose large plant at Vallejo, Cal., has been doing very little for the last month or two, is getting into good shape again, and expects to resume operations on a large scale early next month. A large quantity of second-grade pavers has been disposed of, and a good market has also been found for the accumulation of sewer brick, leaving the yards practically bare. John Payne, who was formerly in charge of the California Brick & Pottery Co.'s plant at Glen Ellen, Cal., and has lately been working in the East, has been engaged as superintendent, and will take charge September 1.

The loss of the large paving brick plant of the Los Angeles Pressed Brick Co. at the city limits of Santa Monica, Cal., which was destroyed by fire August 16th, will have little effect on the company's San Francisco agency, as most of the paving brick was used in southern California. Plans are now being considered for the restoration of the plant, and while nothing has been definitely settled it is believed that the paving brick department will be placed with the large plant at Los Angeles, and the raw material shipped in from other points. The Richmond, Cal., plant, which ships to the San Francisco market, is keeping well filled up with work.

Gladding, McBean & Co. of this city have added to their list of large contracts that for terra cotta on the Los Angeles Investment Co.'s building at Los Angeles. The one-mile railroad which this company is building from its works at Lincoln, Cal., to the clay beds is to be

extended one-half mile further to open up a new bed.

The plant of the Pacific Sewer Pipe Co. at Elsinore, Cal., resumed operations August 5, after being closed nearly two years. E. McClintock is superintendent. This plant was formerly operated by the Fireproof Construction Co., being taken over by the Pacific Company some time ago.

The Pomona Brick Co. of Pomona, Cal., is having one of the busiest seasons in its history, and is shipping material to a number of neighboring towns. The plant, which has been operated for several years by W. N. McMullen, has a capacity of 500,000 brick per month, and runs about nine months in the year.

The Ceramic Supply Co. has been incorporated at Los Angeles, with a capital stock of \$100,000, by Jos. Kirkham, Newton Evans, A. S. Farley and H. M. Wisler.

It is reported that the California United Brick & Tile Co. of Los Angeles, will start a branch plant at Bakersfield, Cal.

The West Side Brick Co., which recently installed kilns near Pentland, in the oil fields, is putting in a brick machine with a daily capacity of 20,000 brick. The company's third kiln is now under fire, and the prospects are favorable, as there is a great deal of building in the old district.

Geo. J. Brown, who recently started a brick factory at Winnemucca, Nev., opened his first kiln a few weeks ago. The output was quickly disposed of at \$13 per M., the community having formerly received all its brick from Reno at \$19 per M.

The Pacific Brick Co., which recently began work at San Luis Obispo, Cal., has put in a new machine, and has its first kiln under fire.

The Taft Brick Co. of Taft, Cal., has been incorporated, with a capital stock of \$50,000, by E. L. Burnham, J. C. Sloan, and J. R. Ramsay.

Holt & Gregg, who recently started a brick works at Anderson, Cal., are planning to open a distributing yard at Sacramento.

The Livermore, Cal., Fire Brick Co. recently closed a large contract to furnish fire brick for the Pacific Gas & Electric Corporation, which will take up a large part of its output. With favorable prospects for the coming year, the company is putting in some new machinery and several other improvements.

The Coalinga (Cal.) Brick & Tile Co., whose plant has been closed during the installation of a lot of new equipment, resumed work about the middle of the month. It is now equipped to manufacture all kinds of tile.

THE SMOKY CITY.

Pittsburgh, Pa., September 15.—There has been a fair demand locally for building brick, but for the same term last year business was considered better.

The Perfection Brick & Tile Co., of Boston, Mass., have bought three farms in the vicinity of Fayetteville, Pa., and work is to be started immediately upon the erection of a large brick and tile plant, which will cost in the neighborhood of \$70,000. The plant will have a capacity of about 50,000 brick per day and in addition to brick, tile and terra cotta will be manufactured. Possibly later a pottery plant will be built.

The Corry Brick & Tile Co., of Corry, Pa., will furnish the brick to be used in the new Presbyterian church at Corry, and a \$6,000 business block which is being built in the same city.

The Patterson Clay Products Co., which has been a part of the Clearfield Brick Manufacturing Co., has withdrawn from that organization and hereafter will conduct its business upon an independent basis.

The contract for 125,000 brick to be used in the new plant of the American Hoist & Mfg. Co., at Lock Haven, Pa., has been awarded to the Eagle Brick Co., of that city, for immediate delivery.

The Nineveh Coal Co., of Philadelphia, is expected to issue orders soon which will place the brick plant at Seward, Pa., in operation.

A new dryer has been built at the plant of the Allentown Brick Co., to take the place of one recently burned. Additional machinery has been installed, which, according

to the officials of the company, will enable them to produce about 12,000,000 building and paving brick annually. The name of the old company operating this plant has been changed to the above, the concern having been bought by Earl E. Litz and his associates of New York. Howard I. Wheat is the general superintendent of the plant and he is being ably assisted by Samuel S. Demarest. Two of the fourteen kilns being erected by the Freeport Clay Products Co. have been completed. The plant is located at Freeport, on the Allegheny River, and each of the kilns will have a capacity of 90,000 brick. It is planned to make the property the largest of the character in the lower Allegheny River Valley.

The plant of the Pearl Clay Products Co., of Bradford, Pa., located at Kushequa had a narrow escape from being destroyed by fire recently. The fire caused a damage mainly to the sheds estimated at \$1,000. George W. Foster of Lewis Run is the president of the company.

The charter of the new Jeannette Brick & Stone Co. has been recorded at Greensburg, Pa. Brick tile and terra cotta will be manufactured.

Kilns are being rebuilt and the plant of the Hancock Shale Brick Co., at Hagerstown, Md., will soon be in operation. It was destroyed by fire. The property is under the management of H. N. Rosen.

Leo P. Harlow has been appointed receiver for the Patuxent Brick Co., of the District of Columbia, by Circuit Court Judge J. B. T. Thornton.

Improvements are being made at the plant of the Rockwood Brick Co., near Johnstown, Pa. New machinery is being installed.

With a capital stock of \$500,000 the Perfection Brick Co. of Middleborough, Pa., has been incorporated by Joseph F. Adams and Leo J. Dunn, of Boston, Mass.

The One Hundred Percent Brick Co. has filed a \$3,000,000 mortgage for record at Carlisle, Pa. W. B. Beam of Philadelphia is president of the company. Considerable curiosity exists in Carlisle concerning the plans of the company so far as that district is concerned, of which no official notice has been given so far.

The property of the Standard Shale Brick Co., near Youngsville, Pa., which was recently sold on a foreclosure of a mortgage held by B. F. Everett of Detroit, Mich., has been taken over by the Foster Brothers of Bradford, who have been actively engaged in the building brick industry for many years. The new plant is quite a valuable one, first built at a probable cost of about \$40,000 and was bought in for about \$10,000. The Foster interests will immediately organize a stock company with \$60,000 capital, and about \$20,000 of this amount will be spent in improving the plant and increasing its capacity. The company will be known as the Youngsville Brick & Tile Co.

SKYSCRAPER LIMIT IN CHICAGO.

Chicago, Ill., Sept. 11.—The time limit is up for the skyscraper in Chicago. September 1st was the date set making the law effective as to the height of buildings here. The limit is now two hundred feet, a reduction of sixty feet from the former limit. This limits the tallest building to sixteen stories high in place of twenty-one. In the last few days just prior to the time limit, there were issued a number of permits for skyscrapers at the old height limit. Work was to be begun on these the day the permit was issued, or at least some time prior to September 1st, and continued, otherwise the permits will be revoked. As a number of these buildings cannot be completed for several years, work will necessarily be slow in many instances.

The number of building permits issued for August, 1911, was very large, and the amount, breaking all previous records for a single month, was \$22,721.00. This is \$7,165,700 greater than the month last year. Last year was a record breaker in the building line here, and this makes the present record all the more notable. A list of the principal buildings to be erected under the old law as skyscrapers, follows:

Continental and Commercial National bank, La Salle, Quincy, Adams streets, and Fifth avenue; \$4,500,000.

Marshall Field estate, office building No. 1, southwest corner of Wabash avenue and Washington street, 21 stories; \$1,600,000.

Marshall Field estate, office building No. 2 Washington and Clark streets, 21 stories; \$2,000,000.

Henry C. Lytton, store and office building, State street and Jackson boulevard, 19 stories; \$1,600,000.

Chicago, Burlington and Quincy railroad office building, South Clinton street and Jackson boulevard, 19 stories; \$1,500,000.

Boston Store addition, State, Dearborn, and Madison streets, increasing height of present structure to seventeen stories, with the exception of the Champlain building at State and Madison streets; \$1,000,000.

Morrison hotel, Clark and Madison streets, 20 stories; \$3,000,000.

Kesner office building, State and Quincy streets, 21 stories; \$1,500,000.

Charles A. Stevens and Bros., 17-25 North State street, and 16-18 North Wabash avenue; \$1,400,000.

Addition to the Karpen building, Michigan avenue and Eldredge place; \$650,000.

E. R. Otis and Mrs. Harriet Blair Borland, 21 story building in Jackson boulevard, between Dearborn street and Plymouth court; \$1,300,000.

Mrs. Carrie D. Meacham, addition to the new Otis building now being erected at Madison and La Salle streets; \$354,000.

This is a remarkable showing for Chicago and gives the clay manufacturer an opportunity to market his wares. In addition to this list there is also the new Field Museum, to cost \$4,500,000, a new office building for the Otis Elevator Co., a four story addition to the Municipal Building, a number of Catholic schools and churches, to say nothing of the factory, apartment and residence buildings, to be erected within a short time.

Work on the many skyscrapers under way in the downtown district, is being pushed as rapidly as possible. There are still some labor troubles that are holding up some of the work, and this is the only drawback to the building now. Some definite action has been taken regarding this by the courts, and there will in all probability be less trouble, particularly of the slugging variety in the future.

One of the notable features in connection with the erection of large buildings here, is the amount of architectural terra cotta being used. Brick and terra cotta certainly have the preference in this respect here. It is difficult to recall a structure, with the exception of the new Field Museum, that is not or will not be constructed largely of clay brick or terra cotta. This is one of the most gratifying features in the present building situation.

In this connection it might be well to say a word about the growth of the terra cotta industry in Chicago. There are now three large concerns manufacturing architectural terra cotta here. These supply nearly all that is used in this section, and are increasing their industry all the time. The Northwestern Terra Cotta Co. has recently completed the rebuilding of the section of its plant destroyed by fire, and the company has a large number of big orders for important work. A large number of the skyscrapers being erected here, are being furnished with terra cotta by this concern, and the company feels much gratified over the demand.

This company has recently purchased twelve lots opposite its present plant on Diversey boulevard. The property consists of 157x125 feet, at the southeast corner of Diversey boulevard and Paulina street, and the 200 feet adjoining. The property is vacant and the purchase was made for the subsequent increase in size of the plant.

Common and face brick are in very fair demand now, and there is sure to be a more active call as the progress on so many large structures becomes more marked. If there will only be a continued period, when the labor men do not try to hold up work, the fall and even up into the winter months, should show a very good demand for brick and clay lines.

The outlook for face brick is very fair. No particular reports are heard as to the excess of demand, but there has been a fair demand and the indications are for at least as favorable a demand for fall. Other clay lines are about as active as could be hoped for at this time,

and the situation certainly looks good in so far as demand and activity is concerned.

One of the latest projects to call for a large amount of architectural terra cotta, will be the construction of the new building to be erected in the very near future for the Chicago, Burlington and Quincy railroad. The structure will be located at the southeast corner of Clinton and Jackson. It will be twenty stories high, of white enamel terra cotta. The contract has not been let yet for the material. This will be the first skyscraper on the West Side.

Reports at the office of the Bonner & Marshall Co., seem favorable. Mr. Bonner is out of the city, and the demand for brick looks gratifying to the company. No rush is reported, but a steady and satisfactory demand all the time.

Mr. Wm. Schlake, president of the Illinois Brick Co., informs us that they are now operating all of their yards and while the demand of late has been none too good on account of labor troubles, which were settled September 7th, they look for a steady increase in sales from now on.

The general strike among the Chicago yards, occasioned by the "walk-out" of the engineers, some time in August, has been settled satisfactorily. The men went back to work at the same wage, but the question of wages may be reopened in the spring.

PHILADELPHIA NEWS.

Philadelphia, Pa., September 13.—There has been no change in business conditions here. Brick yards have been fairly busy all summer, but the year so far, as a whole, does not seem to be up to the average; still, the general average is always a big one and there is always more or less demand for burned clay building materials. There has been more of a surplus in the yards than usual, but there will not be any more brick carried over at the end of the year than there was last year, because the plants here have not run to the same capacity. There were many big plants that opened a month later this year so they could dispose of the stock carried over first, feeling that it did not pay to have a big surplus on hand.

There have been a great many factories built here this year, which speaks well for Philadelphia during this dull spell. The cost of the various factories, going up this year, totals about \$5,000,000. Brick, hollow tile block and terra cotta have entered largely into the construction work on these many buildings.

Architects here have been specifying this year considerable variegated green and purple slate, running in random widths, in thickness from 3-16 to 1½ inches, starting with 1½ inch at the eaves, while at the top of the roof it would be 3-16 of an inch.

Savre & Fisher, of the Heed Building, furnished the brick for the \$900,000 High School at West Philadelphia. Kittanning gray brick are being used for a new office building here. Hard red brick is being used for the new office building at Twelfth and Race streets.

Macklin & Stevenson have begun operating a paving brick plant at Newton Hamilton, Pa. The plant has been equipped with new machinery. They have a large supply of clay nearby.

A group of new homes has recently been built at Orange, N. J., called "The Fireproof Village." The homes are built entirely of terra cotta. There are about fifty of the cottages, differing in architectural style, although similar in their structural qualities. Hollow terra cotta block have been used for wall partitions, floors, etc. It is thought that the saving of insurance will make up for the increased cost over frame buildings.

The Perth Amboy, N. J., factory of the National Fire Proofing Co., furnished the material for these cottages. In the walls and partitions the block are laid end on end, so that the hollow spaces form continuous chambers from top to bottom. These dead air spaces make the walls non conductors of heat, making the house cool in summer and warm in winter. In the floors, the block are laid in rows between masonry beams covered with any kind of surface flooring desired.

The Philadelphia & Boston Face Brick Co. has been incorporated at Metuchen, N. J., with a capital of \$100,-

000, headed by Charles S. Edgar and Lew R. Edgar of Metuchen and Eugene B. Abbot, of Boston, Mass.

The Tuckahoe Brick & Sand Co. is being organized here by J. K. Egan to handle brick and sewer pipe. They have moved their office from 404 to 411 Bulletin building.

The Mayer Pottery Co., at New Brighton, Pa., has been dissolved. Joseph Mayer, Ernest Mayer and Luther Platt have been closing up the affairs of this firm.

Ralph F. Channell has started in business at 313 Hale Building, and is handling the output of several plants, one being the Hiram Schwank's Fire Brick Works at Johnstown, Pa., which makes considerable bottom plate brick for the open-hearth steel plants. The Schwank plant is a new one at Irvona, Pa., but the Johnstown plant is an old one making mostly open-hearth brick. The Irvona plant will burn about 20,000 fire brick a day. They will make more hearth brick than fire brick for some time. There seems to be a tendency toward a little lower prices on fire brick.

Mr. Channel also handles the brick and tile of the American Brick & Tile Co. at South River, N. J. This plant makes a great deal of cap gutter and life rails for plunge baths and swimming pools and has installed several of these in private and public places.

He also represents the McClain Fire Brick Co. of Pittsburg. This firm has six plants, three in Ohio and three in Pennsylvania and their output of fire brick and terra cotta has been increased 25 per cent over that of last year. The McClain Co. are building a new plant at Snow Shoe, Pa., which will have a capacity of 20,000 fire brick a day. It will be one of the most up-to-date plants ever built. The best machinery and modern methods will be installed.

The Montello Brick Co. of Reading, Pa., is under new management, L. A. Rehr being in charge now. The several plants they have are running and are turning out a first class product as well as a large output.

The Philadelphia Brick Co. furnished the brick for 410 houses here as well as 6,000,000 brick for the new Curtis building for the Ladies' Home Journal.

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BRICK

AND CLAY RECORD

VOL. XXXIX
No. 7.

CHICAGO, OCTOBER 1, 1911

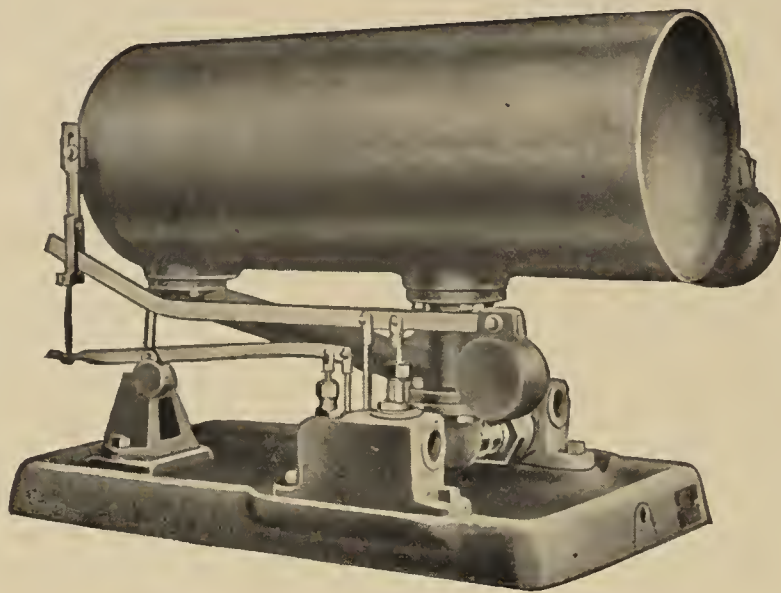
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Table of Contents

Page	Page
Model Chicago High School Building..... Frontispiece	The Paving Brick Industry—The Municipal Congress—The Detroit Muddle—Paving Brick's Opportunity263-265
Planning for the Show—Architects and Dealers Interested .....243-245	Drain Tile and Drainage—Bad Concrete Pipe Failure—Drainage to Reclaim Southern Lands .....266-267
Under the Green Flag.....246-247	Terra Cotta and Fireproofing—A Difference of Opinion—Terra Cotta Saves Money.268
Drainage in Eastern England, by C. G. Elliott, C. E.....248-250	General Pottery News.....269
Vallejo Brick & Tile Co.....251-252	Sand Lime Department—One of the Michigan Group—Questions and Answers...270
Improved Pottery Kiln.....253	In the Stiff-Mud Field.....271
Successful Colorado Plant—Interesting Insurance Men .....254	Gasoline Haulage Motors.....272
Where They Make Fernholtz Presses...255-257	China Clay Monopolized by England.....273
The New Karpen Building.....257	Trade Review—Our Eastern Letter—Our Buckeye Letter, Etc.....274-280
Editorial Comment .....258	
For Our Architect Friends.....259	
Far Behind with Orders—Shooting Clay Pigeons .....260	
The Superintendent—Burning Tile in a Continuous Kiln—Damages for Delay in Furnishing Brick261-262	

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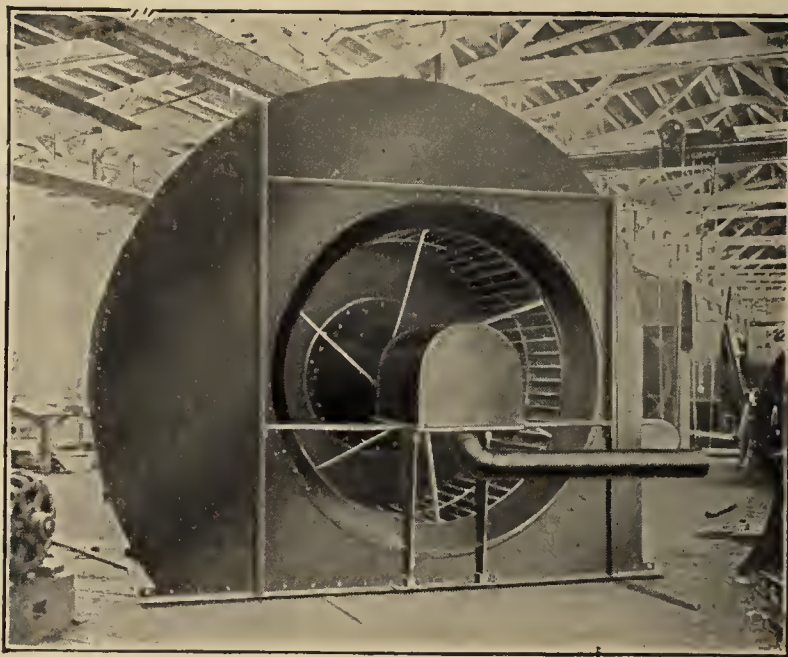
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VOL. XXXIX—No. 7

BRICK

AND CLAY RECORD



OCTOBER 1, 1911

PLANNING FOR THE SHOW

Half of the Coliseum Floor Space is Already Taken and Those Desiring Choice Positions Should Make Reservations at Once. Plenty of Time for Preparation

The summer season having ended and we being now fully started on the long stretch of winter effort, which will culminate in the great clay show to be held at the Coliseum next March, interest is rapidly increasing in the plans for the show and accordingly in the details of the exhibits.

The sole and only purpose of the enterprise is to give burned clay a bigger boost than it ever had before and to popularize burned clay products to a greater extent throughout the country and to boost the sales of the individual exhibitors. To carry out this idea, the floor of the great Coliseum will be made as attractive as possible and fully \$6,000 will be expended in decorations and lighting, to carry out the desired effects and to create the prominence and publicity desired. It is hoped that every exhibitor will do his utmost to make his space as beautiful and interesting as possible, through the display of his products. It is upon the individual work of each exhibitor that the success of the show will now depend. Many of the exhibits of the foreign shows have been so wonderful and beautiful as to demand worldwide attention and publication of illustrations and articles in numerous magazines.

The management of the show, also the publishers of "Brick and Clay Record" will make every effort to cooperate with the exhibitors in the designing and preparation of their displays. "Brick and Clay Record" will show, in its succeeding issues, a series of illustrations showing the possibilities of brick and clay products displays and these may be used as suggestions by any exhibitors, thus it becomes to the members simply a matter of selecting samples of their products suitable for the work and in having the materials arrive in Chicago,

promptly on time, in advance of the show, and to have all preparations fully made for the erection of their exhibits.

Plenty of Time to Install.

An objection has been raised by a number of prospective exhibitors that the time allowed for the preparation and installation of the exhibits was not sufficiently long to permit of elaborate or satisfactory displays. If this were true it certainly would be a handicap to the success of the show, but the management has looked into the matter thoroughly and by consultation with those who have exhibited in other shows, it has been decided that three days will be ample time for the preparation and placing of exhibits if proper plans are made.

It must be remembered that the management of the show is required to pay \$1,000 a day rental for every day that the Coliseum is used, not only for the days when the doors are open, but for all the days previous required for the installation of exhibits, and every such day of preparation is only a source of expense without any supporting revenue. To insure the satisfying of the



The Coliseum, Where the Great Clay Show Will Be Held Next March.

exhibitors, however, and to prove their earnest desire to make the show the greatest possible boost for clay products, the management has succeeded in arranging for an extra day, in advance of the opening day announced, and will also use one of the first days of the exhibit for preparation, not opening the doors to the public until March 8th. This gives the exhibitors a period of five full days or 120 working hours—sufficient time to install their exhibits.

How It Can Be Done.

The show is held at the time of the year when workmen are easily obtained and arrangements are being made to have on hand for the use of the exhibitors the fastest

and most expert brick layers and tile setters in the country. These men can be supplied in any number and will be selected for intelligence and ability. Their services, in any number, will be at the disposal of the exhibitors.

With these competent men on hand to do the work, it becomes simply a matter to the exhibitors to so carefully design their sketches and to be so well prepared with the specifications and working drawings that the greatest possible number of men can be put to work at one time, assuring the certainty of results. Men can be employed in two shifts, thus permitting work throughout the twenty-four hours.

It is, of course, a fact that a show of clay products is much more difficult to bring into being, in proper form than a show of other materials, but it will be all the greater credit to this industry if displays of a very elaborate and beautiful character are erected and the result will be much greater in the way of publicity. Before deciding off-hand regarding this matter, the clay products manufacturers should talk the matter over with the secretary, Mr. Hopley, and at least find out what the possibilities are and just what advantages the exhibit will be to their particular interest.

This is Your Show.

None of the readers of "Brick and Clay Record" should gather the impression that this great clay show will not be of any particular interest or value to him and that it is unnecessary for him to take an active part in its project having been assured along that line, but the greatest possible success of the enterprise is entirely in the hands of the clay workers themselves. If they sit back serenely to "watch the parade" go by the result will not be as great as had been hoped for, but if each one does his share, there will be no question but what this will be the finest show of its kind ever held, and the greatest possible boon to the clay industry. Because you think this or that or have conceived certain ideas regarding the matter, do not allow yourself to be side-tracked but take the trouble to talk the matter over by letter with the secretary of the show, Mr. Hopley, 816 Chamber of Commerce, Chicago. He will be pleased to explain matters to you fully. Through him you can inform yourself fully before making a decision in the matter.

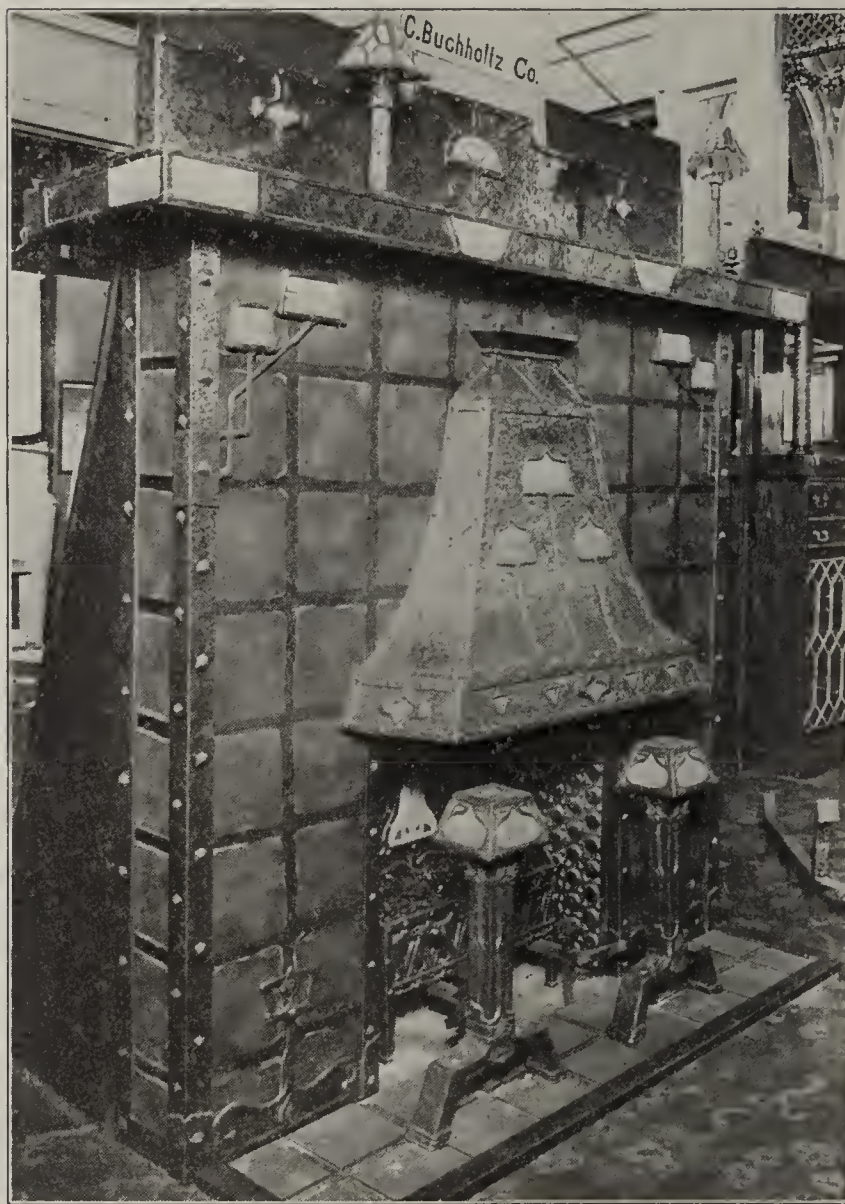
It is only justice and fairness to those who have put their money up to promote an enterprise, the purpose of which is solely to boost the clay industry, that you should at least have some correspondence with them regarding the matter and allow them to place the proposition before you fully.

We have taken the trouble to secure estimates on exposition construction work from leading contracting brick masons and tile setters, in Chicago, and we are convinced that by proper management the most elaborate displays can be erected within the time limit. In fact, a number of these contractors will enter into guarantee contracts to erect exposition structures according to specifications within the time required. The best brick masons and tile setters in the country will be available here, next March, and by working night and day shifts, there will be no difficulty in completing structures of the most artistic character. It is simply a question of careful planning and plenty of "ginger" when the time arrives.

The Holland-American Tiling Mill Co. has been formed at Joplin, Mo., with a capital of \$100,000. The incorporators are A. Van Dorse, A. H. Russell, G. C. James.

ARCHITECTS AND DEALERS INTERESTED.

The architects and their associations in various parts of the Middle West are taking an active interest in the Clay Products Exposition. The contractors are also waking up to the importance of this show, and both architects and contractors in large numbers will attend from all parts of the country. It will be a wonderful opportunity for them to see all that is to be seen in clay pertaining to their business, and many have expressed the intention of taking full advantage of the opportunity. These are the men the clay products trade should make every effort to convince of the superiority of burned clay products. They are men who plan for and specify the uses of building material. They are the men to whom you would like to sell. Now that their interest is awakened we have surely made decided progress, but we have still to convince them forcefully of the possibilities and superiorities of burned



Attractive Display at Mantel, Tile and Grate Dealers' Convention, Made by the C. Buchholz Co. of Hoboken, N. Y.

clay products. It is up to the manufacturers of clay products to convince them. The management is going to induce architects and builders from all parts of the country to attend the Clay Products Exposition and it is important that the display of clay products be of a convincing nature, otherwise the exposition will be a wasted opportunity.

"The Dealers Building Material Record," a live journal, awake to the advantages to be derived, from the coming clay show, by architects and builders as well as manufacturers, is doing its utmost to arouse interest and enthusiasm in the enterprise, and in its September issue several pages are devoted to boosting the show, from which we take pleasure in publishing the following extracts:

"Dealers in every part of the country are coming more and more to realize that brick is a live proposition and that there is good money for them in handling it. So it is, too, with drain tile, sewer pipe and structural tile. The public is waking up and is taking a great interest in these lines. This clay exposition is certain to increase this interest. It will make clay products the talk of the country. Dealers are looking forward to it for that reason for they know that their sales are going to be increased through the good effects of the general interest created.

"Many dealers, too, have not yet put in a line of building brick and are looking forward to this clay exhibition as their opportunity for sizing up the proposition, comparing all the various lines and so making an intelligent selection of the best line to handle. An evidence of this interest are numerous inquiries received by the "Dealers Record" from dealers in many parts of the United States asking about the exposition and asking advice as to the best line of brick to handle and the addresses of the manufacturers. To all of these the "Dealers Record" has replied that the best manufacturers will be represented at the exposition and that it will afford an ideal opportunity to make a trade alliance.

"This is a point that brick manufacturers will not be slow to take advantage of. They need the co-operation of local dealers to handle their lines and they see in this show their opportunity to win new dealer agents. All worth while lines will be on exhibition and every progressive manufacturer will have an exhibit worth traveling a long way to see, in charge of experienced clay men

and even international in its scope and the product of every wide-awake manufacturer will be on exhibition, so that you can make comparisons between the various lines and establish trade connections that will be the most serviceable for your particular case.

"Dealers can be assured that any manufacturer not represented at this Clay Exposition is putting out a product of very little merit or one that he is ashamed of.

"When plans for the Clay Exposition were first being talked over, it became evident that there was a tendency



Neatly Arranged Exhibit of Face Brick and Flower Urns at British Clay Show in London.

who have been schooled in brick manufacturing and selling and can give you practical pointers of value that you will need in going into this business.

"Dealers who are interested in brick, but have not yet put in a line, can see and learn and judge intelligently at the Clay Products Exposition. This is a show national



Excellent Sanitary Ware Exhibit Shown at British Clay Show.

among some of the brick manufacturers to leave it to their local Chicago dealers to contract for space and put in their exhibits for them. This will not do, however, as the more wide-awake ones in the industry have been quick to realize. The local agent, or dealer's representative, handles many lines. He is interested in all and cannot reasonably be expected to concentrate on any one item and incur the expense in time and money required to exhibit this one line effectively at the show.

"This is the manufacturer's opportunity to meet the dealers at first hand and get acquainted with them. Every manufacturer who takes space and exhibits the way he should, will win converts to his line and will establish new agencies among the dealers. A local agent, on the other hand, could hardly be expected to do this. He has no interest in the matter, and, in fact, would be rather against it than otherwise, since it might make competition for him.

"Then again the dealer who already represents a clay manufacturer may look upon any lack of co-operation or enthusiasm on his part as a lack of interest; and he may find some other manufacturer at the exposition who shows more enterprise and gives the dealer more promise of assistance. This may lose any short-sighted manufacturer of this kind dealers and markets.

"The manufacturers recognize this as a national show. No matter where their plants are located there will be interested buyers and dealers present from the localities concerned. Dealers will be on hand from every section of the country; they are expecting an interesting and instructive display of clay products, and from the way the leaders are going after the proposition, planning for their exhibits, it is certain that no one will be disappointed except those who stay away and any dealer can find a goodly number of live manufacturers at the show who are making the best of clay products and want good selling agents. In a word the Clay Products Exposition will be a big factor in the clay business, both going and coming."

The Kingsland (N. J.) Brick Co. are running to full capacity and sell their product locally.

UNDER THE GREEN FLAG

It must be the feeling of those who have the clay industry at heart that all publications in this field should act in harmony and should devote their energies to promoting the interests of the industry which they represent, and in furthering their usefulness to the trade. It is indeed deplorable to see a publication depart from the paths of consistency to indulge in outbursts of jealousy toward a contemporaneous publication. The friends of the publisher, guilty of such an offense, must deeply regret such evidence of pettishness and bad taste. In our own case, we feel that we have quite enough to do in carrying out our plans for service to the clay industry, without meddling in the affairs of other publications, and we would respectfully suggest to our contemporary that it would be good policy to always bear in mind the sacred adage to "First cast out the beam out of thine own eye and then shalt thou see clearly to cast out the mote out of thy brother's eye."

We do not propose to be drawn into any controversy with our contemporary and will endeavor to attend strictly to our own business and that of the clay industry which we are endeavoring to serve. Ordinarily we would pay no attention to the unjustified, unreasonable and ridiculous attack made upon us by the publisher of the "Clay-Worker" in the article entitled "Under the Black Flag." The fact, however, that the publisher (evidently for the purpose of insuring that the article would be read, and knowing his own publication was inefficient for that purpose, to secure its proper circulation among the members of the clay industry) reprinted his "Black Flag" article in the form of a circular and sent it out broadcast throughout the country, seems to require that we shall place this matter fully before our readers that there may be no misunderstanding.

In its issue of July, 1911, the "Clay-Worker" published an article entitled "Under the Black Flag" which we reproduce in full herewith:

UNDER THE BLACK FLAG.

(Published in the "Clay-Worker," July, 1911.)

In olden times piracy was quite common. It was also quite dangerous, for those who sailed the sea under the black flag neither gave nor expected quarter, but paid the penalty of death when captured. That is why piracy ceased and became a memory, or a theme for fiction—that is, on the sea. On land it is quite different and piracy of one sort or another still goes on because, perhaps, there is no punishment to fit the crime. For instance, our Chicago contemporary, in its issue of June 15, publishes as the feature article of that number a paper by Prof. A. V. Bleininger on "The Tunnel Kiln," which was prepared for and read before the Illinois Clayworkers' Convention in Chicago in January. No credit at all is given to the Association. In the same issue is another paper, that by W. E. Dunwody, of Macon, Ga., on "Increase Sale of Brick," which was read at the Georgia Hardware Convention, but nothing is said of this latter fact. Literary piracy of this sort may not be dangerous, but is most disreputable.

The heading "Under the Black Flag" is equivalent to a charge of piracy. Piracy is equivalent to robbery, and to commit robbery of literature you have to steal credit from the author. It is evident to the simplest mind that in this particular case no one has been robbed of any credit, honor, rights or privileges. In our issue of June 15th, 1911, an article was published entitled "Increase Sale of Brick," which was sent to us, for publication, by Mr. W. A. Dunwody, president of the Standard Brick Co., Macon, Ga. Following is the exact style in which the title and the name of the author of the article were published:

INCREASE SALE OF BRICK

By W. E. Dunwody, President of the Standard Brick Co., Macon, Ga.

Brick is the aristocrat of building material. It has a known pedigree which goes back to a day more than three thousand years before Christ, when the Assyrians reared their terraced temples and palaces in Western Asia

In Ur of the Chaldees, whence Abraham went into the
of Canaan, in Nineveh, and in
lings were made

These figures are absolutely correct, and the contractors' bids with their offers to build this identical house at the figures named can be had. Notwithstanding these facts and figures, thousands of wooden houses are being erected every year. Why? Because the public does not know the truth.

How are we to ed

By intelligently

In the same issue appears an article prepared by Prof. A. V. Bleininger, of the University of Illinois, on the subject of the "Tunnel Kiln," and we reproduce here the exact style in which the title and the author were announced at the commencement of this article.

THE TUNNEL KILN

Use of the Tunnel Kiln Dates from 1751.—Many Modifications and Improvements Have Materially Lessened the Disadvantages of this Interesting Type of Kiln.

By A. V. Bleininger, Director of Ceramic Department, State University, Urbana, Ill

In making a study of this most attractive subject one experiences a distinct feeling of surprise in finding not only, that the idea of this type of kiln dates back to such an early time, but that a great number of modifications have been proposed and patented, during the intervening years.

The tunnel kiln differs from the continuous kiln in that the fire is stationary, while the material to be burned moves along. In both kilns, however, the direction of movement is horizontal. Another difference, between the two types of kilns, is that in the tunnel kiln the burning chamber is of a fixed length, while in the continuous kiln it is of an indefinite length.

The construction of the kiln itself is simple and not expensive, owing to the small dimensions of the tunnel and the fact that a good fire brick lining is needed only near the middle of the kiln.

The destructive effect of frequent heating and cooling is avoided, since the kiln temperature is practically constant. The brick work therefore should last a long time.

The distribution of heat is not difficult, owing to the small cross section of the tunnel.

The heat regulation may be perfected to machine-like accuracy.

The saving of heat over the ordinary type of kiln is considerable.

We would continue to ignore the ridiculous attack made upon us except for the distribution of the reprint "Black Flag" circular, as previously stated. This action of the publisher of the "Clay-Worker," who is also secretary of the National Brick Manufacturers' Association, is not altogether surprising. During the past years, he has time and again used his official position for the purpose of promoting his personal interests and anything emanating from his office in such a manner as did this reprint, might seem to bear the stamp of official approval. At any rate, it was an evidence of bad judgment and peevishness which will be regretted by his friends and its issuance has required the publication of this statement of facts.

The most certain way to arrive at a fair judgment of this matter will be to consider the opinions of the two persons most concerned—the authors of the articles mentioned.

A letter from Mr. W. E. Dunwody, president of the Standard Brick Co., at Macon, Ga., says:

"I sent you the article thinking it would be of interest to you and possibly to some of your subscribers. It has proven considerably so to a number of your subscribers, and so far as my connection with the article is concerned, I am entirely satisfied."

It is to be noted here that Mr. Dunwody's name as author of the paper or address was printed conspicuously below the title.

Two letters were received from Prof. A. V. Bleininger, head of the department of ceramics of the University of Illinois. As in the case of Mr. Dunwody, Professor Bleininger's name was published conspicuously under the title of the article. The article had been revised for us by Professor Bleininger, and as the Middle West Convention had no control over the paper or further rights in the matter whatever, no special notice of the fact that the paper had been read at any time was thought necessary, especially in this case. There were other reasons which would be entirely satisfactory to those most concerned why mention of the Middle West Convention in this connection was not advisable, or necessary.

In Professor Bleininger's letters he says:

"Although the paper published was practically the same as the one read before the convention, revision had been made by me before sending this paper to you, as I had turned in others. I do not see where you had anything to gain by omitting the reference and hence you could have had no object in doing so. I dislike very much to become involved concerning such a trifle. It is obvious that the writer has been amply credited. Personally, I am very much annoyed that such a fuss has been made over so slight an oversight."

These statements are included in letters written to us by Professor Bleininger on Aug. 7th and Sept. 6th.

In most cases, the one injured by misrepresentation, such as our competitor has been guilty of, is the party who tries to make the trouble.

DRAINAGE IN EASTERN ENGLAND

Comparison of English and American Drainage Methods, Giving Results of Observations Made by C. G. Elliott, C. E., Chief of Drainage Investigations, U. S. Department of Agriculture, During a Trip Abroad

(Continued from Sept. 1st issue.)

Drainage of Highlands.

In striking contrast to the level agricultural area just described, appropriately called the "granary of England," are the farms of the uplands, those old estates to which is attached a political and ancestral history. (Fig. 10.) The buckthorn hedge found everywhere, incloses the clay field, which produces sorry crops unless it is under-drained. The clays retain water with great tenacity. Though the surface has a slope of 1 in 4 or 5, the soils are wet in the winter and spring. It is on such lands that drains have been placed from 16 to 24 feet apart and for which in early times, pipes 1 inch in diameter were frequently employed.

Draining with mole plows operated by traction steam engines is highly regarded where the soils have no pebbles, sand, or roots, in short, where the soil is almost pure clay. The mole, by no means a modern invention,

of a traction steam plant. In the vicinity of Saffron Walden, drains are made 16 feet apart and 24 to 30 inches deep for \$3.00 an acre, the owner furnishing the fuel for the engines and digging the pits in which to start the drains. The entire drainage costs probably \$8.00 to \$10.00 an acre. Such drains have been constructed during the last fifty years and are still in favor where the land is a close clay such as before described. It is claimed by some drainers that lines of drain-tile, called "land pipes" in England, laid 33 feet apart give as effective drainage as mole drains placed 16 feet apart. Be that as it may, tile constitutes the standard material for drains. One of the leading brick and tile manufactures in Cambridge reported that he sells about 2,000,000 feet of land pipes annually. Mole drains sometimes fail in from two to five years, and are then replaced by land pipes. The prices per thousand at the factory are as follows: 2-inch, \$5.50; 2½-inch, \$7.50; 3-inch, \$10; 4-inch, \$12.50; 5-inch, \$18.75; 6-inch, \$26.25.



Fig. 9. Farm House on the Reclaimed Fens.



Fig. 10. Farm House on the Hill Lands.

is a steel shaft, 3 inches in diameter, with a conical point, and having a ball a little larger than the mole attached to the rear end. It is joined to a cutter, the upper end of which is clamped to a carriage with small truck wheels. The carriage carrying the mole is started at the lower side of the field, where a pit is dug and the mole set at the desired depth. It is drawn through the soil by an engine stationed at the opposite side of the field. A cable passes from the engine around a pulley attached to the mole carriage and thence to a vertical drum upon the engine, which pulls the mole across the field as the cable is wound up by the drum. A second engine, which is stationed at the lower side of the field, draws the carriage, after the mole has been raised from the ground, back to a point where the next drain will begin. The engines are of the traction type and each moves forward over the interval at which the drains are placed after the passage of the mole. In this manner, parallel drains are made up the slope or in some cases diagonal to it. A receiving drain made of tiles is laid at the foot of the slope and each mole drain is joined to it by a branch tile line about 15 feet long, the tile being carefully and securely joined with the mole drain. Drains of this kind laid in clay hillsides not infrequently give good service for twenty-five years.

Mole draining is done under contract by the operators

The pieces are about 13 inches long and have a circular bore, but are flat on the bottom.

The subject of underdrainage has been as widely and sharply discussed in England as any topic connected with agriculture. The enactment of the public moneys drainage act, in 1846, which authorized the loan of public money for the construction of farm drainage, gave a remarkable impetus to that work. Later, the private moneys drainage act authorized companies to loan money in the same way. Standard methods of draining were specified and enforced as a condition upon which funds for the work could be furnished. The experience gained under the various conditions has been summarized by Mr. J. Bailey Denton, an eminent engineer, and for forty years closely identified with drainage improvements which were carried out under the several acts of Parliament, to which the general term "Government drainage" has been applied. In an address upon the subject in 1885, he said:

I have laid considerable stress upon the fact that underdrainage was first introduced, as a general (Government) system, under the false pretense of extraordinary cheapness, because I consider that to that fact, and to the influence of the overdrawn theory, that depth governs the distances between drains, is to be attributed the discredit which has fallen upon deep drainage.

* * * *

The popular notion of "Government drainage," as it is called, no doubt consists of the cutting of underdrains 4 feet deep, 30 feet apart, parallel with a fence, down the steepest fall of the land, and connecting these parallel lines with one main drain,

following the lowest ground and discharging at the lowest corner of the field, and there is no doubt that under the influence of probing rods and tabular returns, occasional instances do exist in which fields containing a variety of soils, and presenting a diversity of surface, have been drained in uniform parallelism from one side to the other, at an equal distance between the drains. The absurdity, however, of applying any uniform arrangement of drains to cases where soil and surface both vary in character is so manifest that it is unnecessary to say that no responsible person could sanction such a "system." And with this remark, therefore, the popular idea in question may, we believe, be dismissed from the minds of all practical men.

He urges that the opinion apparently held by many farmers that drainage will obviate the necessity of thorough cultivation of clay lands is erroneous, and cites instances where deeper and more thorough cultivation had greatly improved the action of drains which were thought to be insufficient.

The Elkington System.

But little mention is now made of a method of draining which at one time attracted more attention in England than any other. It was applied to soils which were made wet by springs or seep from higher lands. The usual plan of draining by means of parallel ditches and drains failed to dry land which was saturated in this way. Joseph Elkington, of Warwickshire, in 1764, drained his farm by means of auger borings made near the base of the slopes from which the water came. The borings penetrated the supply springs or veins of water, and the pressure which had previously forced the water through the soil then forced it toward the surface through the small wells which were provided. The wells were connected with suitable drains, either covered or open, which conducted the water to its proper outlet. The success of Elkington and others who followed his methods resulted in the drainage of a class of lands, which up to that time had resisted every attempt at reclamation. The land to which this method applied was limited, but the merits of the "well system" of drainage are still undisputed, and it was later successfully used in Sweden where other methods had failed. The principles upon which Elkington's methods are based are now being applied with success in this country, in draining irrigated lands in the West.

Like other methods of draining, it should be employed only where the conditions suggest its adaptability. While its use is limited, it is nevertheless a valuable method and should be employed wherever the source of water and structural conditions of the soil are favorable. Upon recommendation of the board of agriculture, Parliament voted Mr. Elkington the sum of £1,000 in 1795, in appreciation of his services, which were represented at that time to be of great value to the country. The Duke of Bedford, a distinguished patron of Elkington, also presented him a reward in addition to his fee for services in reclaiming his land.

Loans for Draining Lands.

Funds can now be obtained by owners of estates from companies which have been authorized by Parliament to loan money for the improvement of farm property. There are two of these—The Scottish Drainage Co., of Edinburgh and the Lands Improvement Co., of London. The former is authorized to do business in Scotland and the latter in England and Wales. The London company was incorporated by special acts of Parliament in 1853, 1855, 1859, 1860, and 1863, and has authority to loan or advance money to landowners for the general improvement of landed property, among which are farm buildings, drainage, and others of a permanent nature. The outlay is charged upon the property benefitted and repaid by way of annuity, spread over a period not greater than forty years, at the discretion of the board of agriculture and fisheries. This company has advanced about £9,000,000 (principally for

farm buildings.) Since its incorporation, the annual rate of interest having been 3.75 to 4 per cent.

In case an advance is desired for draining, the landowner must file the following application with the Lands Improvement Co.

I am desirous of availing myself of the powers of the company's acts to enable me to execute the herein-mentioned improvements of my estate, and I hereby request you to submit this application to the board of agriculture and fisheries for the report of their inspector in the terms of the acts of parliament.

He must add particulars regarding the acreage, amount of rentals received, the character of the work proposed, and an estimate of its cost. The company then refers the matter to the board of agriculture and fisheries, which board sends an inspector to examine the farm and the plans of the proposed work. If he approves them, he so reports to the board, whereupon the company promises the loan.

Upon the completion of the work the board inspector examines it, and if he reports that it is well and properly done the land company pays the certified bills of cost and the amount is charged against the property. The loan so granted takes precedence of all mortgages.

In addition to the cost of the construction, the company charges a commission of 5%, where it undertakes the entire work. The board of agriculture and fisheries also charges fees for its inspectors and for its approval of the plans. Thirty-one years is the time fixed by the board of agriculture for the maturity of loans for drainage.

Upon inquiry it was learned from Mr. R. J. Grantham, the inspector of the board, that no call had been made upon the board for such work for several years past. The reason assigned for this falling off was that lands have depreciated in value to such an extent that owners will not incur the expense. It is quite possible, however, that owners do not now need loans, for it was learned, incidentally, that one proprietor in Suffolk County had placed an order with a Cambridge factory for 150,000 feet of drain-tile to be used on his estate, and that one firm alone sold 2,000,000 feet of drain-tile last year. The impression prevails quite generally among the moneyed interests that agricultural lands are not yielding satisfactory returns to their owners. The occupiers of the lands are much better satisfied with present conditions than are the owners.

Comparative Features.

Comparing drainage which has been done in England with that now in progress in the United States, we find many differences, some of them quite striking. Much is said about the aid which was given by the English Government to owners of estates for draining. Under authority of the public moneys drainage act of 1846, loans were made for this purpose at 3.33 per cent, maturing in twenty-two years. This act greatly stimulated the drainage of farms, and did much toward establishing a uniform and effective system under Government supervision, particularly where tile-drainage was employed. The principles and practice of the art received careful consideration from the foremost agriculturists and engineers of the time. Later, companies were authorized by Parliament to loan money and construct drains under limitations similar to those imposed by the Government. This latter provision for obtaining funds has been in favor with landowners and more draining has been done under the private moneys drainage act of 1849, and subsequent acts of a similar character, than was done by the Government direct.

The Great Fens, which were largely public lands, were

VALLEJO BRICK & TILE CO.

Municipal Improvements Throughout California Provide a Good Market for the Splendid Paving Brick Made at This Coast Plant

The plant of the Vallejo Brick & Tile Co., Consolidated, is situated about one and one-half miles north of Vallejo, Solano County, California, and has a water frontage of over 1,500 feet on Mare Island Strait. It is located on a point



Schooner Loading Brick for the San Francisco Market.

of land which was known in the Spanish days and records as "The Embarcadero" and was "the place near the channel for the shipment of hides and tallow." This waterway is now kept open by the United States government on account of the Mare Island navy yard and is navigable by the largest deep sea-going vessels.

The property consists of 61 acres of land. The shale from which the brick are made outcrops on the water front in the form of a low bluff about 25 ft. in height. The contour of the ground is exceedingly favorable for cheap handling of raw and finished product by gravity, from the raw material in the clay bank through the grinding and mixing machinery to the kilns and then to barges or schooners on the water front.

Class and Quantity of Material.

The shale from which the brick are made is known as a "Kidney Shale." The main body is a deep blue in color and this is overlaid by from 10 to 40 ft. of yellow shale interspersed with layers of a soft sandstone.

An analysis of this shale shows that its composition is almost identical with that of the "Canton Shale" from which the justly celebrated "Metropolitan Paving Brick" is made at Canton, Ohio. Cleveland is largely paved with these brick and it is said to be the best paved city in the United States.

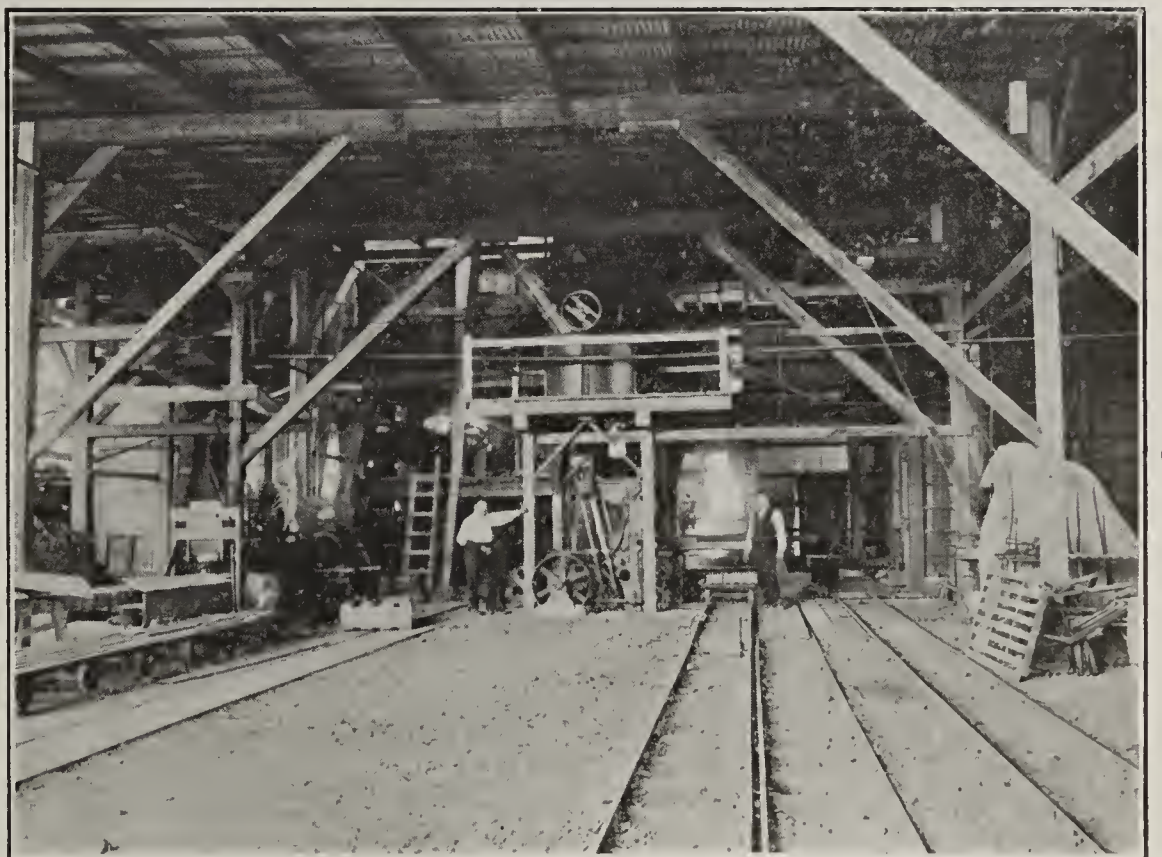
The principal ingredients of these shales are silica and alumina with smaller percentages of iron, lime and magnesia.

Machinery.

The machinery at this plant is designed to make wire cut brick by what is known as the "stiff mud" process. The shale is dumped into the dry pans and ground fine, then mechanically elevated to bins, dropped into the pug mill, where it is mixed with water; then to the brick machine, where it is forced hot through the die. This squared column of still hot clay then travels under a miniature "ferris wheel" and is cut by wires into brick size. These brick are then put through a repress. From there, loaded on cars of 500 brick each, which are put through the dryer and are taken direct to the kilns. After the brick are burned and cooled, they are discharged from the kilns and loaded for shipment or taken to the yard where they are sorted and piled.

The vitally important adjunct to the equipment of the paving brick plant is the kiln. On the kiln depends the quality as well as the quantity of product produced. This plant is equipped with a round 30-ft. kiln of the "bee hive" type and a 16-chambered continuous down-draft kiln.

Each chamber holding 35,000 brick and the plant is designed to produce 60,000 brick per day, running single time, the present kiln capacity being upward of 900,000 brick per month.



A Corner of the Machine Room Showing Brick Machine and Dry Press.

The fuel used at this plant is crude oil, which is brought by a steamer to the company's wharf and pumped through a six-in. main to a large storage tank placed on the top of the hill on the rear of the property. The oil is brought by gravity to the boilers and to the kilns. This fuel is about

one-third the cost of the cheapest coal and is easily and cheaply handled and eminently satisfactory.

Finished Product.

A large number of tests made on the paving brick turned out by this plant show the brick to exceed the standard requirements by more than 100 per cent. In addition, the company has its own "rattlers" and makes abrasion and absorption tests for its own guidance. The navy department, on an order of paving brick shipped to the Island of Guam, got an abrasion loss of less than 10 per cent and



General View of the Plant of the Vallejo Brick & Tile Co.



Laying the Foundation for a 16-chamber Kiln.

an absorption of a little over 1 per cent. These brick show tests equal to the Seattle Paving Brick and as good as the best product of the Eastern kilns.

The Market.

The market for vitrified brick in Central California is almost unlimited and is as yet scarcely touched.

The city of San Francisco will use 30,000,000 vitrified brick in the reconstruction of her sewer system and has already specified them for gutters, preliminary to paving the streets. The Oakland Traction Company is using brick from this plant for runners along their street car tracks and will use nearly two million brick in that manner during the present year.

The state of California has voted \$18,000,000 for the improvement of state highways and experience has demonstrated that nothing stands automobile traffic like a good vitrified brick. A country road with a runway of brick about 18 ft. wide down the

center and a macadam street on either plant also turns out a thoroughly vitrified building brick in the rare colorings of salmon and chocolate, as well as the more common ones of red and black.

It cannot be too strongly stated that vitrified paving brick is a complete success and that they have come to stay. That the largest field on the whole Pacific Coast is Central California and the people are to be congratulated on having a plant so near at home which is turning out a vitreous brick not excelled by any plant in the United States for street paving or sewer building.

Work is to be started on the Panama-Pacific Exposition grounds somewhat earlier than was generally supposed. President Taft will break ground for the Exposition in October, and the laying of foundations will soon follow. An architectural commission has been named to consult with the Exposition Company, and a council consisting of Willis Polk, Clarence Ward and W. B. Faville, prominent architects of that city, has been appointed to supervise the plans.



View of the Vallejo Plant from the Water Front.

IMPROVED POTTERY KILN

Greatest Amount of Heat With the Least Consumption of Fuel One of the Chief Advantages Claimed by the Advocates of This New Style Kiln

For nearly a score or more of years, pottery manufacturers have been looking for a kiln which would give the greatest amount of heat with the least possible consumption of fuel. With this end in mind, time and time again, different methods have been given a thorough trial.

It appears, however, that John L. Gamble and John

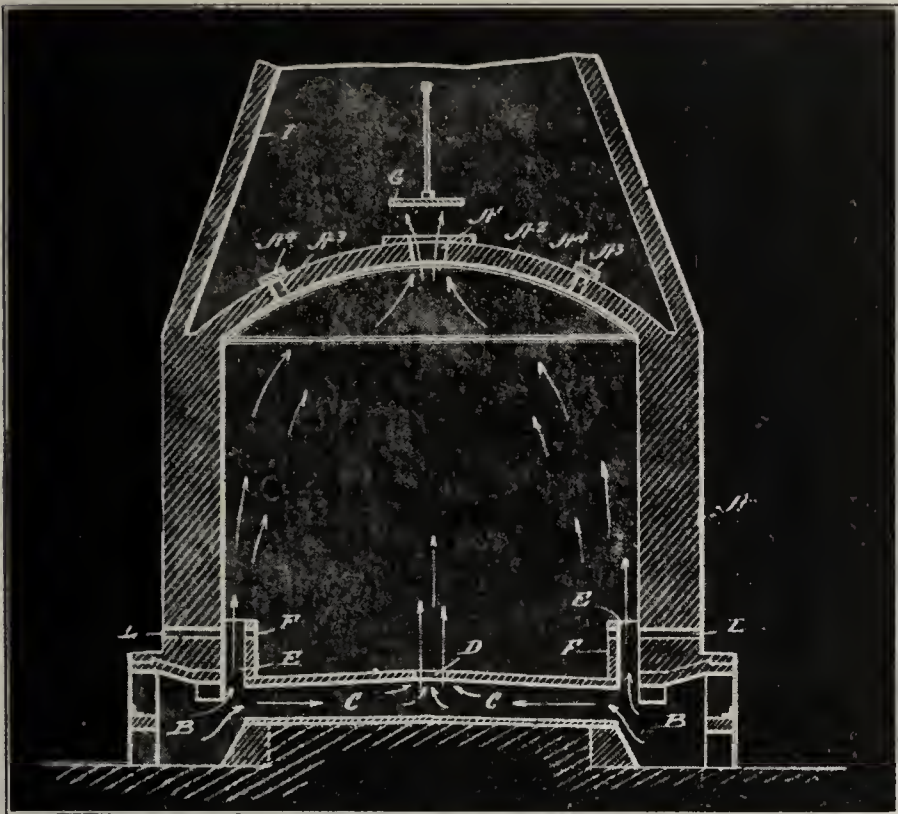


Fig. 1. Vertical Section of Kiln with Valves Arranged to Secure an Up-Draft.

Bryan of East Liverpool, Ohio, have overcome many difficulties which have given trouble to both pottery and brick manufacturers by the creation of an improved kiln, which is being built by a number of clay manufacturers throughout the country.

"In carrying out the invention, we provide the kiln," said Mr. Gamble, "with furnaces or fire pits from which heat supplying flues lead inwardly and discharge to the kiln at the center thereof. These flues, for convenience of reference, we term inlet flues or heat supplying flues and they also have outlets or ports, near the rim or wall of the kiln. In a down-draft kiln, there are also provided, what for convenience, we term outlet-flues in both the floor and wall of the kiln, the outlet or up-take flues in the wall being hereinafter referred to as the outlet wall flues, while the corresponding flues in the floor are referred to as the outlet floor flues."

In the construction shown, the kiln is provided with fire pits, arranged at intervals around its circumference, separated by equal spaces. From these fire pits, inlet or heat supplying flues extend inwardly and discharge at the center of the kiln.

As best shown in Figure 4, each of the flues "C" is made in two sections, side by side, in order to secure the desired heat carrying capacity without making the flues so large as to necessitate the use of special brick in the production thereof.

These heat-supplying flues "C," all have a common discharge opening or port "D" at the center of the kiln and they also have individual discharge openings or ports "E" adjacent to the wall of the kiln. These ports

"E" are each surrounded by what are ordinarily known as bag walls "F," which extend upward about two feet and are open at their upper ends. By this means the heat that is discharged to the kiln by each of the supply flues "C" is divided into two approximately equal parts, one part discharging into the kiln at the center port "D" and the other discharging into the kiln at "E" near the wall thereof, thus securing an even distribution of the heat delivered into the kiln, as well as insuring the heating of the floor of the kiln between the openings "D" and "E," the one at the center of the kiln and the other at the outer ends of the flues "C." Thus the heat is delivered uniformly and distributed to the kiln.

In the operation of the kiln as up-draft, the heat may pass from the openings "D" and "E" up through the pottery contained in the kiln and out through the central opening "A" in the crown "A" of the kiln when the valve "G" controlling the opening "A" is raised.

In forming a down-draft kiln, up-take or outlet wall flues "H" are provided in the walls of the kiln and discharge at their upper ends at "H" into the stack or cone "I" above the crown wall "A" of the kiln. Cover walls "H" extend inwardly over the upper discharge ends of the outlet wall flues "H" and tend to deflect the heat discharged thereby toward the center of the stack.

The up-take flues or outlet wall flues "H" communicate at their lower ends with inwardly extending flues "J" forming outlet floor flues in the floor "K" of the kiln. These outlet floor flues "J" extend nearly to the central heat discharge opening "D."

Each of the outlet floor flues "J" is provided with two openings "J" and "J²," one, "J," near the inner end of the flue "J" and adjacent the central heat discharge opening "D," and the other port, "J²," near to and be-



Figure 2. Plan of Kiln Floor, Side Walls Being Shown in Section.

tween the adjacent bag walls "F" of the discharges "E" of the heat supplying flues "C."

In the operation of the kiln as a down-draft kiln, the heat discharged at the central opening "D" arches over into the adjacent openings "J" of the outlet floor flues "J" and discharges thence into the floor flue "J" and up the up-take or outlet wall flue "H" before described, while the heat rising through the bag walls "F" arches over and passes through the outer or passage "J²" into the floor flue "J" and is thence delivered to the wall flues "H." By this operation, every portion of the pot-

tery in the kiln is subjected to uniform heat, the same heat prevailing at the center as at the wall of the kiln which insures proper burning of the articles in less time with a consequent saving of fuel without impairing in any degree the quality of the burning. As a matter of fact, in glost articles, the quality is improved because the heating is perfected in less time.

In the described operation of the kiln as a down-draft

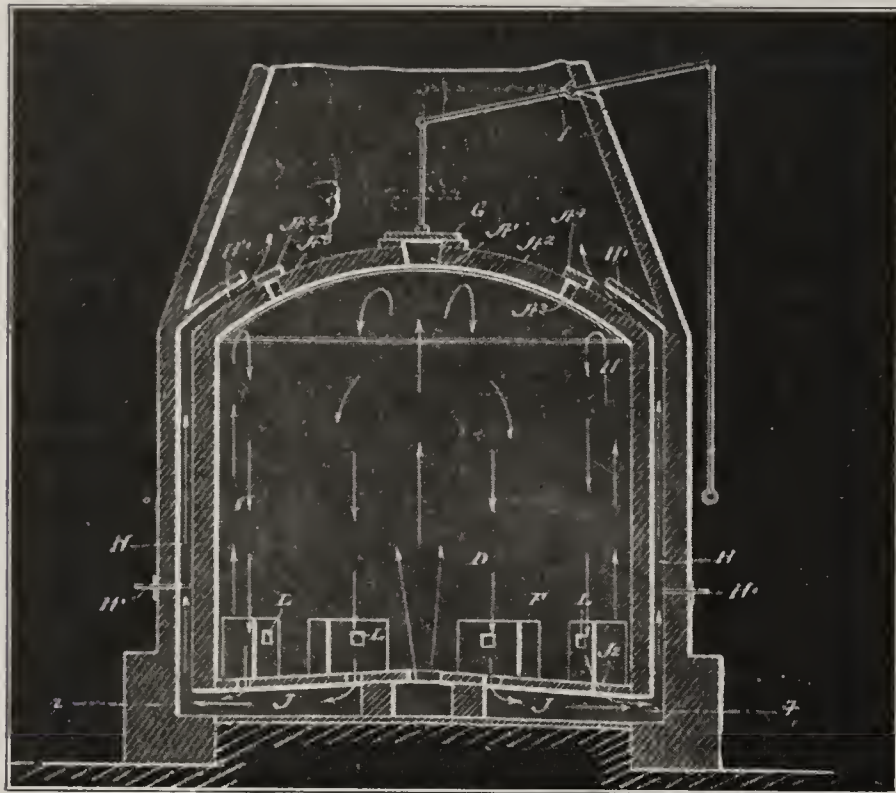


Fig. 3. Vertical Section of Kiln with Parts Arranged to Secure a Down-Draft.

kiln, the heat passing from both the central discharge "D" and the wall discharge "E" of the hot air flues "C" rises up to and strikes the crown or dome "A" of the kiln and then returns and passes out by their respective outlets of ports "J1" and "J2" to the outlet floor flues "J" so the heat is utilized in the down-draft action both as it ascends and descends, thus extracting the maximum heat units from the fuel.

The outlet wall flues "H," it will be noticed, are entirely contained within the walls of the kiln and if desired, damper "H" as shown in Figure 3, may be used to shut off the up-draft flues, when it is desired to use the kiln as an up-draft kiln.

In Figures 1 and 3, the dome of the kiln is shown as provided with openings "A3" and covers "A4." These openings may be used in cooling the kiln when desired, and they may also be utilized if desirable, or necessary, in the use of the kiln as an up-draft kiln.

FIRE BRICK NOTES.

The Stephens-Anderson Manufacturing Co., of Aurora, Ill., has received an order from the Bickford Fire Brick Co., of Curwensville, Pa., for a swinging elevator possessing a capacity of 25 tons an hour, to be installed as soon as possible.

Ambrose M. Sloteman, who has been connected with the sales department of the Karthaus Fire Brick Co., at Bellefonte, Pa., has resigned to become sales agent for the Hayes Run Fire Brick Co., in the Western states. The main offices of the latter concern are at Orviston, Pa.

The rough texture oriental facing brick made by the Hydraulic-Press Brick Co. have been selected by the library boards of Geneva, Schuyler and North Platte, Neb., for their new buildings.

SUCCESSFUL COLORADO PLANT.

Every well organized and successfully operated manufacturing enterprise established in a community adds to the wealth, the importance and the reputation of that community, no matter how small the annual output of the industry may be. Every enterprise that takes the raw material from the earth and converts it into a merchantable commodity for which there is positive demand, should be listed as a public benefaction and given the moral and material support of every member of the community.

Such an organization is the Poudre Valley Pressed Brick Co., Fort Collins, Col., composed of local citizens and financed by local capital. The company was organized in June, 1905, and a plant established for the manufacture of a high class red pressed brick from shale found in great quantity near Fossil Creek, four and one-half miles south of Fort Collins. The company met with a number of serious obstacles at first, due to lack of experience and a sufficient knowledge of the kind and character of machinery and appliances needed to successfully produce the quality of brick demanded by contractors and builders. For nearly two years the company was groping in the dark in search of results, but at last every obstacle has been overcome and everything is running smoothly and the plant is turning out a superior article of building brick. During the season of 1910, the company made 4,700,000 brick and paid out \$15,000 for labor and 2,500 tons of coal were used.

The brick manufactured by this company is in con-

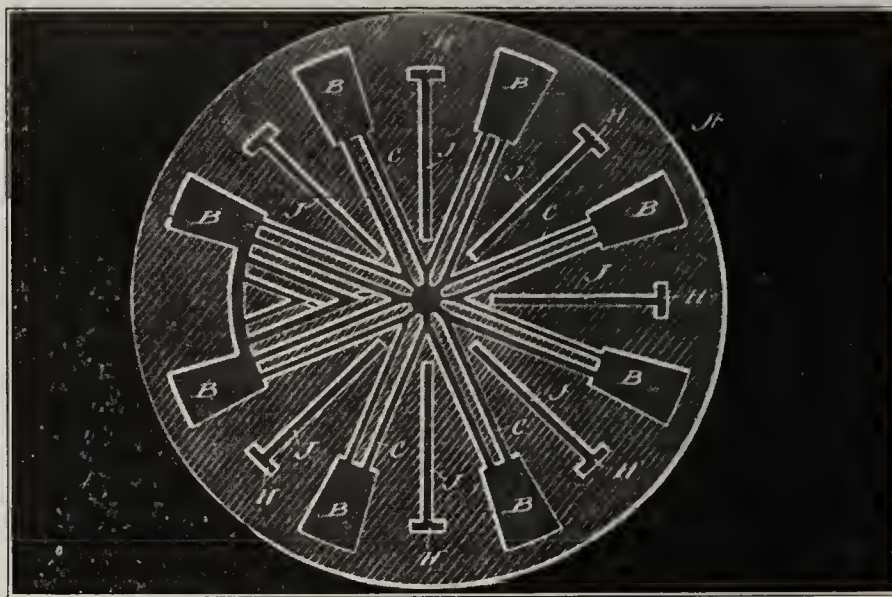


Fig. 4. Cross Section on Line 4-4 of Figure 3.

stantly increasing demand, 278 carloads being shipped last year to Cheyenne, Wyoming, Scottsbluff, Nebraska, Greeley, Loveland, and Windsor, Colorado.

The company is capitalized at \$100,000, and the present officers are: B. F. Hottel, president; F. P. Stover, treasurer; F. W. Stover, secretary. During the past year the company has substituted electric power for steam in operating the plant.

INTERESTING INSURANCE MEN.

The efforts of the Building Brick Association of America to promote clay products interests continue unabated and are directed along many important lines. One recent bit of enterprise which is exceedingly commendable is the address made to 258 insurance companies, calling their attention to the work of the B. B. A. and asking for their co-operation in the effort to promote fireproof construction.

WHERE THEY MAKE FERNHOLTZ PRESSES

The Dry Press Which Helped to Make St. Louis Famous—Its Home and the Efficient Organization Back of It—High Class Methods of Manufacture

The officers and members of the Fernholtz Brick Machinery Co., of St. Louis, believe in the future of dry press brick. They believe that all this talk about pressed brick becoming less popular amounts to little, in the face of pressed brick's superiority. While they admit that a modern wire-cut stiff-mud brick is made in such variety

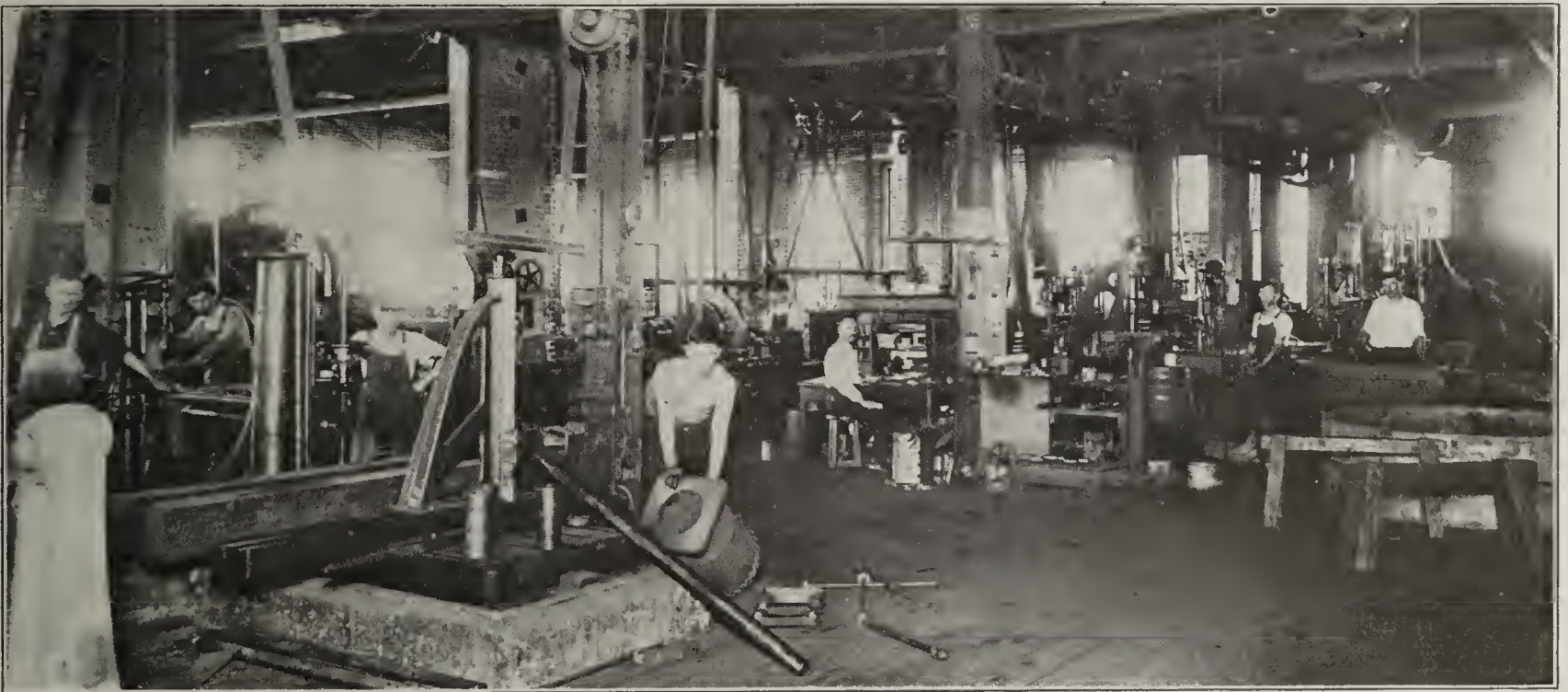
This company also takes much pride in the quality of brick produced on its presses, many of which are to be found in important plants throughout the country. The Fernholtz brick press has been on the market for many years and has proven a great success wherever used. The original designer of the press, Emil Fernholtz, is no



View of a Portion of the Fernholz Plant, Showing Excellent Shipping Facilities.

now that it offers new possibilities, yet they are positive that nothing can ever take the place, permanently, of pressed brick as the most suitable material for the facing of city residences, of factory, store and business build-

longer connected with the company, being now a resident of Los Angeles, Cal. The Fernholtz Brick Machinery Company was organized in 1899, but the press itself has been identified with the industry for over eighteen years.



Busy Working Floor of Main Machine Shop at Fernholz Works.

ings of all kinds, public institutions, etc. They contend that the manner in which dry pressed brick are made insures a better quality of building material than by any other process and they claim that in beauty and appropriateness for wall facing, nothing can surpass the modern dry pressed brick.

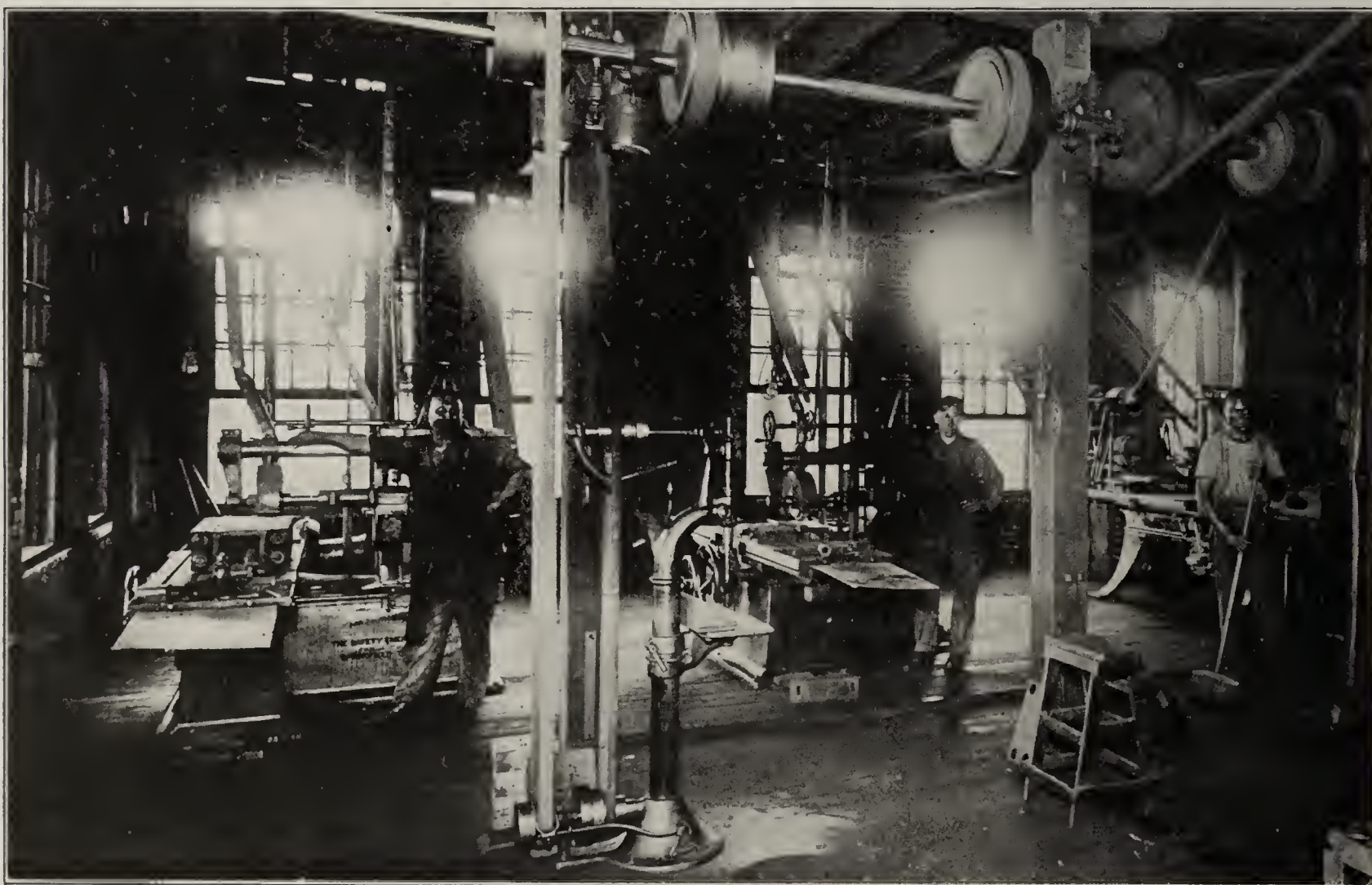
The present handsome factory building was built in 1902. The president of the company is Mr. Eben Rodgers; vice-president, Edward Rodgers, and Mr. William L. Rodgers is secretary and treasurer and also active manager of the plant. The Rodgers' name is well known in the clay industry, being identified not only with the machinery end



Monster Fernholz Presses on Erecting Floor Ready for Shipment.

of the business, but also with the brick-making end. The Rodgers' organization controls the Alton Paving Brick Co., at Alton, Ill., and also the Maryland Heights plant in St. Louis County, Missouri.

cial machine tools of various kinds, and is used also for erecting machinery. Adjoining this is a room for the operation of the smaller tools, and here, also, is found the blacksmith shop. A very elaborate and well-arranged



Many Special Machine Tools at the Fernholz Plant Permit of High-Class Work.

As will be seen by the accompanying picture, the Fernholtz plant at St. Louis, on Boyle and South Vandeventer avenues, occupies an imposing building, constructed of brick, which is commodious and conveniently arranged.

The main floor is occupied by machine shops and spe-

checking system is provided for keeping track of the smaller tools and material used by the workmen.

The second floor of the factory building is occupied by a pattern shop and the pattern stock room. Extra parts are also kept here, and the grinding room is located on

the second floor. The pattern shop is a very busy place where only the most expert workmen are employed, as is the case throughout the plant, it being the policy of the company to employ none but the best workmen and to use none but the best material.

The power plant is sufficient for all the needs of the establishment. A 60-h. p. Atlas engine operates the line shafts, and also, when needed, the generator for furnishing the electric light, the plant having its individual lighting equipment.

While the specialty of the Fernholtz Brick Machinery Co. is dry presses, yet this plant makes a variety of other clay-working machinery and equipment, and the company undertakes to equip plants completely, including all necessary designing and supervising of construction.

NORTHERN MICHIGAN PLANT.

The Northern Michigan Brick & Tile Co., manufacturers of brick, tile, sewer pipe and clay products, with offices at Houghton, Mich., have a well arranged plant at St. Ignace, with a daily capacity of 40,000 common brick. This company advises us that their Raymond 6-tunnel radiation dryer is giving excellent satisfaction.

They report the demand for common brick in their locality is very good and the outlook fine. They state that brick for building purposes, is being used, more and more each year, in Michigan, on account of the high price of lumber and that they expect to increase the capacity of their plant before many years.

The officers of the company, are: M. Van Orden, president; James J. Byers, vice-president; W. T. Pelmeur, secretary and E. A. Reavie, manager.

THE LAST BRICK HOUSE.

The last brick house met by the traveler in going north on the American continent, it is interesting to note, is at Harbour Grace, the second city of New Foundland island. New Foundland, it will be recalled, is the world's tenth largest island.

In this town there is a three-story school structure,



Brick House at Harbour Grace, New Foundland.

with overhanging slate roof, up into which juts a series of pinnacle gables, much after the Swedish style.

Close by there is an old residence in the English manorial style, which has the clustered chimneys at one side, likewise of brick.

Beyond these two, however, as one goes north, he meets no more homes or other buildings constructed out of either clay or brick. Houses are of frame, and largely of simple, unfinished boarding.

FIREPROOF FURNITURE BUILDING.

Chicago is setting the pace for the country, in the number and size of its new down-town buildings erected each year. A gratifying feature of this, to the clay manufacturer, is the increasing use of burned clay products, in these up-to-the-minute buildings.

One of the recently constructed buildings of this character is the new 12-story home of the Karpen Furniture Co. on the corner of Michigan Ave. and Peck Court. The



New Home of the Karpen Furniture Co., in Chicago.

building was designed by Marshall & Fox, architects, built by Thompson Starrett Co. and is fireproofed throughout with terra cotta hollow tile, made and installed by the National Fireproofing Co.

The nine upper stories are faced with brick, Kittanning grays being used on three sides, the deep court being faced with Tiffany enameled, Norman flat brick 12x4 inches in size, and of a light cream color. The unusual feature of the face brick is that they are 12x4 1/8 inches on the face and 2 1/4 inches deep. These are bonded every sixth course with brick 12x4 1/8x7 inches, weighing 26 lbs. each, taking the place of "headers."

Over the windows are brick, made of special sizes to fit the spaces, obviating the necessity of cutting the brick, these being 4x8 1/4x4 1/8 inches and 12x4 1/8x4 inches in size. The brick for the building were furnished by the Thomas Moulding Co., of Chicago.

PROMOTED TO SALES MANAGER.

Mr. Herbert S. Simpson, who has for some time been in charge of the Chicago office of the American Clay Machinery Co., has been promoted to the management of the sales department, of that company, and now makes his headquarters at the main office in Bucyrus, O. Mr. Simpson is a man of marked ability and is certain to make a success in his new position. He is wide awake, enterprising and not only has at heart the interests of his company but also the interests of the clay industry in general.



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EDITORIAL COMMENT.

Talk about "bulldog" tenacity and "sticktuitiveness," did you ever notice that a bulldog will hang on to a root or an old insignificant rag as long and as hard as to a piece of juicy porterhouse steak? And yet, we boast that persistency always wins.

Keeping everlastingly at it, doing the wrong thing, never wins anything but failure.

Persistence is very necessary, but you have probably noticed how persistent some young fellows are in their endeavor to go the "bow-wow." One must first be sure the goal is worthy of the race; pick out the best road, the best mode of travel and then start in to win.

Some clay manufacturers make the mistake of plugging ahead, year after year, pocketing a loss or a small profit, with the blind idea that it will all come out right in the end, never stopping to consider whether the methods employed are of the proper kind or whether their clay might not be better suited to making some other product, whether a little more publicity might not be advisable, or whether some other style of machinery might not be used to better advantage.

If the bulldog would stop long enough to see what he had in his iron jaw, he might wonder if it was worth while to "hang on."

Better call a consultation, look the ground over carefully and if all is well,—grab hold and stick to it through thick and thin. In other words, "Be sure you are right and then go ahead."

Did you ever watch the antics of a "small man." Whether he is in a big or little place, he thinks his secret methods are so vital and important that it would mean ruination to divulge them.

No one should be ashamed to say, "I do not know." The shame is in remaining in ignorance, with the opportunity to learn, at hand.

An amusing story is told, in clay circles, by a man who started in the clay business, many years ago, with no knowledge whatever of the manufacturing process. It was a puzzle and a constant nightmare to him, "how to glaze the ware." He heard it was done by the use of salt, so providing himself with a liberal supply, he mounted to the top of the kiln and proceeded to "salt the kiln" by pouring a liberal quantity in the kiln opening. The result of this crude experiment can well be imagined. However, being determined to learn, he took a "day off" and visited a large and successful plant in a neighboring town. He brought up the subject of glazing and as it happened to be about "salting time," he witnessed a demonstration, which was an "eye-opener" to him.

If we were to mention this man's name, it would be a familiar one, to many of you, as he later became one of the most expert conduit manufacturers in the country and has built up several of the finest clay plants in the country, and in doing so has amassed a comfortable fortune. This was accomplished by digging into the intricacies of the business and by continual study and experiment to find better ways of "doing things," so that today his "word is law" in the finishing and glazing of clay ware.

There is no such thing as rest in human affairs; the very watchword of humanity—and hence of the brick-maker—is progress.

FIRST LOVE-LETTER.

The love-lorn swains, of 4,500 years ago, adopted a fashion which might well become popular again at the present time, and if so, would increase to a stupendous degree, the demand for high class clay products.

In those ancient days the wise youth did not waste his mental effort or strain his vocabulary of endearing names needlessly. He made his love messages so permanent that some of them exist even at the present day. An example of this, said to be the oldest love letter in the world, is now in the British Museum. It is a proposal of marriage for the hand of an Egyptian princess and it was made in about the year 2589 B. C. and was inscribed on nothing more or less than a good clay brick.

HAVE YOU ANYTHING TO "SWAP"?

Perhaps you have never gotten over your boyhood longing to "swap things" and you remember with joy the pleased feeling you had when you thought you had "gotten a little the best of the other fellow," while he, having secured what he wanted, was chuckling with joy with the thought that he had "put one over on you," which only goes to show that "equal exchange is not robbery."

Why not renew your youth by doing some "trading" through the medium of our Classified Ad Department?

If you have any machines or tools about your plant, for which you have no further use, and which you would like to exchange for other articles, why not incorporate your wants in an attractive Classified Ad for our next issue? The cost is only \$2.00 per inch (about 40 words) or \$1.00 for a half inch.

FOR OUR ARCHITECT FRIENDS.

We not only want the architects throughout the country to take an interest in the big clay products show to be held at the Coliseum, next March, but we want them to show us how to make it beautiful. For the purpose of bringing out the opinions and suggestions of the architects of the country, "Brick and Clay Record" is going to give them an opportunity to earn valuable cash prizes through the submission of designs suitable for exhibition structures. The publishers therefore hereby offer the following cash prizes for the best designs of exhibit structures for use at the clay products show to be held at the Coliseum, March 8th to 12th, 1912:

First prize	\$100.00 cash
Second prize	50.00 cash
Third prize	25.00 cash

Specifications.

There is no limit placed on the elaborateness or cost of the supposed exhibit structure. The only limitation is that it shall show the use of the brick manufactured by the exhibitor through its use in wall facings, arches, columns, windows, walls, porches or other forms of architecture in which brick can be used to advantage. The structures must be planned to occupy a space not in excess of 20x50 ft. frontage on the aisle. Designs submitted should show the front elevation of the structure, but may also show the exposed interior.

A well known brick man and two well known architects in Chicago will be selected as judges and the utmost care and fairness will be shown in the treatment of the contestants. The contest will close November 15th, and all designs should be submitted to the publishers, 423 Plymouth Court, on or before that date. The plans should be enclosed in a blank envelope with no writing either on the design or on the envelope to indicate the author, but with the name and address of the sender enclosed in a blank and unidentifiable envelope attached to the copy submitted. When received the sealed address and the design will be marked for identification and separated so that it will be impossible for the judges to identify the authors of the designs submitted and the contest will be settled purely on its merits.

All designs submitted will remain the property of the publishers. Orders for working drawings of any of the designs submitted, may be furnished to the prospective exhibitors by the architects, by special arrangement between them.

As the time of this contest is limited to such a short period, it is expected and hoped that architects will get busy on same very promptly. Each one has the same advantage and the prizes will be easy money for some one.

Brickmakers throughout the country are urgently requested to induce architects of their acquaintance to enter designs in this contest. Address all communications to the Kenfield-Leach Co., 423 Plymouth Court, Chicago.

BOOSTING THE SHOW.

A number of the manufacturers of clayworking machinery have already begun to lend their assistance in booming the big clay products show, to be held at the Coliseum in Chicago, next March, thus showing their disposition to assist in the good cause. The latest evidence of this is on the stationery of the Berg Machinery Mfg. Co., Toronto, Ont., Mr. Berg using the little hand and calendar cut, on the front of his envelopes under the regular return card. No more conspicuous plan for advertising the show could be devised. The same plan is being followed by the Davenport Brick & Tile Co.

MODERN BRICK MAKING.

The very latest and best book for clay workers is the recently issued volume entitled "Modern Brick Making," by Alfred B. Searle, Scott Drainwood & Son, London, England, publishers. It is a handsome volume of nearly 500 pages, fully illustrated and is sold for \$5.00.

Many of our readers will remember the interesting serial, "Modern Clay Working," prepared by Mr. Searle and published in "Brick" during the past two years. While the author is an English clay worker, he is well informed regarding American methods and processes and his book will be a valuable aid to all clay products manufacturers.

Mr. Searle in his new work, covers the various processes employed in clay working from the clay pit to the finished product. The opening chapter dwells upon the selection of clays and their suitability for certain purposes. The various methods of brick manufactured are treated fully and chapters are devoted to the various lines of clay products. The closing chapter treats of the sources of difficulty and loss in clay working plants and gives some valuable suggestions to clayworkers.

FIREPROOFING ABROAD.

It is encouraging to note the increasing care taken by builders, both in this and other countries to provide against the ravages of fire by the use of burned clay fire-resisting materials. In far-a-way Sydney, Australia, the local paper, "Building," states that, "the ordinary commercial man, when building, these days, is insistent upon provision against fire, by any means." It goes on to describe a new modern store building there, and states that "the building is substantially constructed of brick, which affords every evidence of strength and protection."

VALUABLE CLAY BEDS.

John H. Clark, the state geologist of New York, has just completed a canvass of the clay industries of that state, and gives the total value of brick, tile, terra cotta, pottery and other clay products as \$11,518,982, representing the aggregate output of about 225 plants. While it is a little below the total for last year, it may be considered an average output for these industries.

The clay beds of New York state are worth more than \$200,000,000, according to this report by John H. Clark, state geologist. The number of building brick manufactured during 1910 was nearly 1,500,000,000.

BIG IOWA ENTERPRISE.

The efforts of the promoters of the big sewer-pipe plant, to be built at Webster City, Ia., seem liable to be crowned with success, according to reports recently received. Mr. P. W. Hearn, formerly secretary-treasurer of the Lehigh (Ia.) Clay Products Co. was one of the most active in promoting the deal.

The name of the new company is the National Sewer Pipe Co. and the proposed plant, if completed along the lines planned, will be one of the largest sewer-pipe factories west of the Mississippi. It is expected that the building and kilns will cover five acres of land, while the yards and switches will occupy about fifteen acres. It is planned that over 320 sizes of pipe and drain tile will be made, both machinery and hand methods being employed.

The very latest in power equipment will be installed, and the battery of twenty kilns will be arranged so as to facilitate both setting and loading of the ware. The actual work of erecting the plant will begin early in the spring, although the materials will be placed on the grounds during the fall and winter.

FAR BEHIND WITH ORDERS.

The J. D. Fate Co., of Plymouth, Ohio, are exceedingly busy. They are running their plant to full capacity and are far behind with orders. An order has just been placed with them by the Bloomfield (Ind.) Brick Co. for a Fate Special machine with automatic side-cut table and other appliances; an order has also been received for an Imperial outfit for the Fairmount Brick Co., of Eugene, Ore.; another order goes to parties in Wainwright, Okla., an order for a tile outfit is soon to be shipped to a company in Michigan; an order has been received for two double-shaft pug mills for the National Fireproofing Co.'s plant, at Hobart, Ind., making four of these machines furnished that plant; an order is being filled for two Justice clay crushers, with rolls 30 ins. in diameter and 14-in. face, which the Fate Company have been building for the American Equipment Co. and which have proven very successful. Orders for about 25 automatic tables are among those booked which goes to show that the Fate Company are unusually busy. In fact, they report that for the season of the year, they are busier than at any similar period in the history of the company, and they are in the unusual position of having no stock machines ahead for the first of the year.

Mr. A. E. Davidson, the Fate Company's Pacific Coast representative, is now in the East on a business trip, but will soon return to Portland, where he will represent the Fate Company in offices at 604, in the Blake-McFall building.

SHOOTING CLAY PIGEONS.

The large majority of people know little of the extent to which clay is used to promote the art of shot-gun marksmanship or the important part it plays among sportsmen. In developing activity with fire arms, practice must be provided and in the use of the shot gun only a moving target, representing the bird in flight, would be suitable. To provide such a target the "trap" was perfected so that by a peculiar twisting device, discs of clay could be projected into the air and made to travel in a manner similar to the flight of a quail. Clay was found most suitable for this purpose because of its lightness and the ease with which it can be molded into the required form, its cheapness of manufacture and its brittleness. This brittleness is requisite so that the pigeon will be broken even though hit by only a few of the shot discharged from the gun. It will be understood that the pigeon must be broken to some extent, to indicate a hit,



Clay Pigeon Familiar to Trapshooters.

and yet it must be sufficiently strong so that it will not be broken by falling on the ground in case it is not struck by the shot.

Because of the suitability of clay for this purpose and because of the ingenuity of the trap deviser, trap shooting today has become a very important sport and many clubs are in existence all over the country, which have

regular meets at which millions of these clay pigeons are destroyed each year.

The most famous of all the clay pigeons on the market is known as the "Blue Rock" pigeon, sold by the Chamberlain Cartridge and Target Co., of Cleveland, O. We publish herewith an illustration showing the appearance of one of these imitation birds. This "Blue Rock" pigeon is composed of a mixture of cold tar pitch and clay, which is thoroughly dried and finely ground in a burr mill. The pigeon also contains gypsum. The gypsum and clay are mixed with the pitch in a melted condition, thoroughly agitated to make the mixture perfect and then pressed into the shape of the finished pigeon by pouring the mixture into a mold and pressing out the surplus pitch with a plunger, both mold and plunger being hollow and having water running through them for cooling purposes. The pigeons go from the machine to the packing room on an endless belt, being banded with a yellow band in transit. They are packed in barrels of 500 each.

The Chamberlain Co. have been manufacturing clay pigeons by this process for the past 25 years, their factory at present being located at Findlay, O. The annual output of "Blue Rock" pigeons made by this company is over 20,000,000.

NEW WELLER CATALOG.

What must be classified as a text-book on elevating, conveying and power-transmitting machinery, is the latest catalog of the Weller Mfg. Co., a copy of which we have just received. This is considered one of the most complete books ever published on this class of machinery and this fact seems fully substantiated by the book itself. No fewer than 575 pages are contained in this encyclopedia of "Weller-made products."

The appearance of the catalog is very fine, being bound in blue cloth covers, with white lettering. The size, 6½ by 9½ making it very convenient for easy reference.

The various specialties are completely described and excellently illustrated. The descriptions are no more technical than is necessary and are arranged so as to be readily understood. The increasing use of this class of machinery in brick plants is too well known to need comment, but we advise every owner, manager or superintendent to write for a copy of this new catalog, which is sent free upon request.

PROSPEROUS SEASON REPORTED.

The Arnold-Creager Co. report a very prosperous business during the past season, and are looking forward to a revival of business in the soft-mud machinery line. Their plant at New London has been turning out a number of complete brick-making plant equipments which, as usual, are giving the best of satisfaction.

To keep the wheels going round during the dull months the Arnold-Creager Co. come out in this issue with a special announcement regarding an important discount on molds, to which they wish to call special attention.

It has just been announced that between August 8th and 16th the Alliance Brick Co., of Alliance, O., shipped brick to Mansfield, O., for the paving of a mile of roadway. On September 12th a check for the shipment was received. This is certainly fast work, for it indicates the laying of the brick, and the acceptance of the job by the municipal authorities.

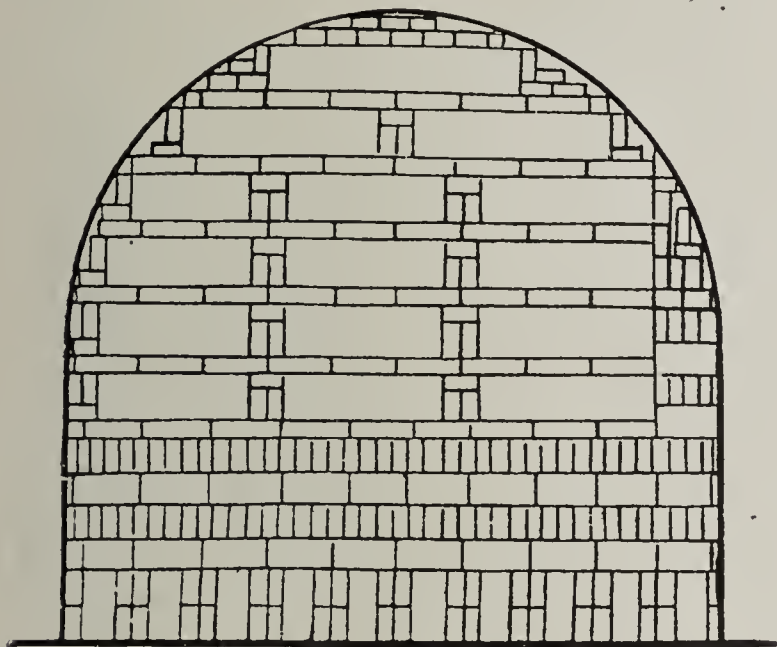


BURNING TILE IN A CONTINUOUS KILN.

The accompanying sketch illustrates a method in vogue in Germany, for setting and burning a kiln filled with part brick and part roofing tile, as described in a foreign brick and pottery journal, which states:

"The brick are clearly shown, the white spaces in the upper part of the kiln being reserved for tile. By setting in this manner, the tendency of the tile to twist or warp is greatly reduced, though it can never be entirely avoided unless special refractory slabs are used to form the recesses. If the brick are properly set they will 'settle' evenly, and the tile with them, but carelessness in setting the brick will result in a large proportion of twisted tiles.

"In the sketch the tops and bottoms of the recesses are shown as made of brick. It will be much better to employ slabs of sufficient size to completely cover the tile and pre-



Method of Setting Roofing Tile and Brick in Continuous Kiln.

vent their being twisted by any pressure from above. The manufacture of these slabs is quite simple, and not expensive, or fireclay slabs may be bought in many districts at a very reasonable rate."

In this connection the following from an English burner is of interest:

"Providing that a continuous kiln is properly built and worked it is quite as satisfactory for burning roofing tile as is a single down-draft kiln. It seldom pays to burn tile and brick together in a continuous kiln unless special arrangements are made for this purpose, but even then it is only a question of management.

"One important factor must, however, be kept in mind, namely, the necessity of maintaining a steady and sufficient output of tile, if satisfactory results are to be obtained from a continuous kiln. Consequently, if the output is small or irregular, it is better to use single kilns. Where the output is sufficiently large, the saving effected by using a continuous kiln is equal to at least half the fuel, and the quality of the goods is certainly not diminished; in some cases, on the contrary, it is improved by the more regular working of the continuous kiln. As millions of tile are burned in contin-

uous kilns each year, in different parts of the world, it is obvious that there is nothing "impossible" about their use for this purpose."

DAMAGES FOR DELAY IN FURNISHING BRICK.

In an action for breach of contract, made August 1, 1909, for "about 100,000" Roman brick, to be delivered when ordered, the First Appellate Division of the Supreme Court of New York says that the defendant knew that the brick were intended for the courts, areas, and front of an apartment house, which the plaintiff was constructing.

The plaintiff ordered the entire quantity to be delivered forthwith, and when the contract was made the defendant was informed that loss would result to the plaintiff from delays in delivery. Wherefore a clause in the printed form of order prepared by the defendant, to the effect that it was "contingent upon strikes, accidents, or other delays beyond the control of the seller," was stricken out. The evidence tended to show that the plaintiff made repeated demands for the delivery of the brick, but that the deliveries were of small lots of a few thousand each, from September 9 to December 11.

The evidence also tended to show that, if the brick had been delivered when ordered, the building would have been inclosed by October 1, 1909, but because of the delays it was not inclosed until the latter part of December or the forepart of January, and the plaintiff claimed that it was thus delayed at least 2 1-3 months in the completion of the building. It was impossible to obtain the kind of brick ordered in the market, or from any one but the defendant, and, after commencing the use of the brick, the plaintiff could not have substituted other brick without injuring the appearance of the building.

The trial judge dismissed the complaint, for the reason that there was no proof of the difference between the contract price and the market price of similar brick at the time and place of delivery. But it is plain, the Appellate Division says, *Raymore Realty Co. vs. Pfotenhauer-Nesbit Co.*, 129 New York Supplement, 1002, that the general rule of damage had no application to this case, and the question involved was whether there was any evidence of special damages which required the submission of the case to the jury. The general rule not being applicable, the plaintiff was entitled to recover such damages as were within the contemplation of the parties; i. e., those flowing directly and naturally from the breach of contract.

The impossibility of proving with mathematical exactness the amount of the damages sustained would not prevent a recovery, provided such damages were certain in their nature and in respect of the cause from which they proceeded.

The plaintiff claimed four items of damage, viz.: \$1,700, paid the building contractor as damages for delay; \$2,600, interest on the average value of the property during the 2 1/3 months of delay claimed; \$486, the proportionate amount of taxes assessed on the property for that time; \$7,758, rentals lost by reason of the delay. The plaintiff,

however, did not have to pay taxes or interest because of the delay.

With respect to the first item, the evidence showed that the plaintiff agreed to pay the said contractor \$1,700 as damages for the delay caused by the defendant's breach and gave its note therefor; but that item included \$1,400, as estimated damages sustained by the contractor by being prevented from doing work on other contracts. Obviously, that item was too remote to be included.

There was evidence, however, tending to show that the contractor was put to an extra expense of \$300, paid to the workmen when idle and waiting for more brick to be delivered. The defendant's breach of contract was the proximate cause of that damage, and it must be presumed to have been within the contemplation of the parties when the contract was made. It was, therefore, error to dismiss the complaint.

As to the last item of damage, the defendant must have known that a delay in the completion of the building would deprive the plaintiff of the use of the property during such delay. Such damage, if shown, was the direct and natural result of the defendant's breach. There was one difficulty, however, in the proof on that head, resulting from the fact that the building was not completed and ready for occupancy until October 1, 1910, and it would not have been completed, in any event, until some time in the summer of 1910.

The delay in delivering the brick did not necessarily cause a like delay in the completion of the building, though it doubtless impeded the other work to some extent. Proof of the yearly rentals did not establish the loss sustained by the plaintiff in not having the building ready for occupancy until October 1, 1910, instead of some time in July or August. To justify a recovery on that head, there must be evidence from which a jury could find, not necessarily with mathematical accuracy, the extent of the ultimate delay in the completion of the building caused by the defendant's breach and the usable value of the property or the rentals lost during that time.

The judgment, dismissing the complaint, should be reversed and a new trial granted.

CONCRETE BUILDING OVERDONE.

Bulletin 47 published by the B. B. A. contains the following:

The "Architect & Engineer," a journal generally supposed to be a cement organ, an advocate of reinforced concrete for all purposes, now urges greater conservatism in the use of that material, a warning that is as timely as it is unexpected, for fewer materials have been more overrated than has concrete.

Says that journal editorially in its last issue: "Unbiased engineers will agree that concrete construction is still in the experimental stage and that constructions of the last decade have been done rather on a large scale without waiting in many instances for the outcome of proper tests, or studying the conditions to which the concrete structures had to be subjected to. Since we know that concrete is destroyed, even by feeble acids and by alkaline solutions, why do engineers expose sewers, aqueducts and pipe lines to those corroding agents? Water to be carried through aqueducts should be repeatedly tested in order to find out if it carries carbonic acid in solution, which is sure to soften the concrete if present in noticeable amounts. Instead of doing this, millions of dollars are spent on that work, with the result that the structures decay in the course of a few years and construction in question becomes a disgrace to the concrete industry. Most builders call fire-proof every construction that cannot be ignited like wood, and forget that concrete columns, beams of floors with the usual one-inch fire protection covering the reinforcing metal, are mostly affected by fire to such an extent that they have to be replaced or that they collapse."

During the past year many improvements and enlargements have been installed at the Hutchinson Brick & Tile factory, Hutchinson, Minn.

GREATEST BRICK JOURNAL ON EARTH.

The following letter shows that our friends appreciate our efforts to give to the clay industry the very best journal possible to produce, from both an editorial and typographical standpoint:

Editor Brick and Clay Record,

Dear Sir: We have been readers of "Brick" for the last fifteen years, and we think it the "greatest brick journal on earth." Our plant has run to full capacity all summer, and we manufactured 2,500,000 brick during the month of August, a daily average of 93,000 brick. We have a good demand and our plant is running at full capacity. Our plant is equipped with two style P American dry pans; one No. 29 American pug mill and a No. 20 American cut-off, three Eagle represses and an American Special Giant augur. Our product consists of gas burned repressed vitrified paving, building and face brick. Very truly yours,

N. HERMES,

Superintendent of the Altoona (Kan.) Vitrified Brick Co.

TEST OF HOLLOW BLOCK.

Since the use of hollow block is becoming more general, the following from the "Contract Record" will doubtless prove of interest to many of our readers.


"Highly successful results were obtained by Professor

University of Manitoba

WINNIPEG CANADA.

April 5th, 1911

Compression tests made on hollow bricks, submitted by Mr. Hook, for the Alberta Clay Products Co., Medicine Hat, Alberta.

DIMENSIONS	Load required to produce crack. Pounds	STRESS REQUIRED TO PRODUCE CRACK		Breaker Load Pounds	BREAKING STRESS		REMARKS
		Pounds per sq. in.	Pounds per sq. ft.		Pounds per sq. in.	Pounds per sq. ft.	
8"x8"x16"	88000	830	119500	140800	1330	191500	Load was applied to these specimens as shown below. 
" "	46000	422	60700	176780	1620	233000	
" "	83000	760	109400	95040	870	125200	
6"x8"x12"	29000	287	41300	96550	955	137500	
" "	77000	762	109800	109580	1084	156000	
" "	53000	512	73700	124990	1210	174000	Tested on end " " " " " " Tested on edge " " " "
5"x8"x12"	13000	124	17860	91870	875	126000	
8"x8"x16"	67000	2050	295000	121890	3740	538000	
5"x8"x12"	52000	2970	427500	92670	5300	763000	
4"x12"x12"	39000	1680	242000	49430	2130	306500	
3"x12"x12"	67000	2880	415000	79070	3990	575000	Tested on edge " " " "
5"x8"x12"	13000	204	29400	53000	832	119800	
4"x12"x12"	13000	238	34250	31630	578	83200	
3"x12"x12"	7000	172	24800	23310	574	82600	" "

NOTE.—Unit stresses are calculated from the full bearing area.

(Signed) E. BRYDONE-JACK,

April 6th, 1911.

Professor of Civil Engineering.

Brydone-Jack, professor of civil engineering in the University of Manitoba, upon a test of some hollow clay block submitted by Mr. Hook for the Alberta Clay Products Co., of Medicine Hat., Alta.

During a third attempt at walling a cistern with concrete cement, at Albany, Wis., the walls again fell, inflicting serious injury on the workmen engaged in removing the framework. Strange that people will not learn that brick makes the best and most durable lining for cisterns, keeping the water soft at the same time.

The Coffeyville Shale Brick Co., of Coffeyville, Kan., is reconstructing its entire plant, with the idea of reducing the cost of production to the minimum.



THE MUNICIPAL CONGRESS.

Paving Brick Interests Not Properly Represented at the Great Gathering of Municipal Authorities Held at the Chicago Coliseum.

It is to be regretted that the paving brick manufacturers did not take a more important part in the Municipal Congress held at the Coliseum in Chicago during the past two weeks. There were gathered here municipal engineers, mayors, members of the city councils, public works commissioners and street and paving contractors from all over the country. In fact, it was the most representative gathering of its kind ever held in this country, and it

The Municipal Congress and Municipal Show, while held in the same building, were two separate propositions. The show itself, while interesting, did not attract as much attention as was expected and the attendance was not very large.

The sessions of the Municipal Congress, however, proved of great importance and interest and produced a large number of important papers and discussions which will greatly assist in promoting municipal interests.

It is again to be regretted that in the sessions of this congress the paving brick interests were not more strongly represented. The sessions of Saturday, September 23rd,



This Brick Roadway Near Danville, Ill., Shows Little Signs of Wear from the Constant Traffic of Heavily Laden Farmers' Wagons.

presented a great opportunity to the paving brick men to further their cause of educating the public in behalf of brick.

The only representation, however, at the municipal show was evidenced by a small booth and meager display of products arranged for under the auspices of the Barr Clay Co., Streator, Ill.; Bessemer Limestone Brick Co., Youngstown, O.; Bloomfield Brick Co., Bloomfield, Ind.; Danville Brick Co., Danville, Ill.; Clinton Brick Co., Clinton, Ind.; Metropolitan Brick Co., Canton, O.; Purington Paving Brick Co., Galesburg, Ill.; Wabash Clay Co., Veedsburg, Ind. They had prepared for the occasion a small pamphlet entitled "With What Shall We Pave?" This pamphlet, while strong in its character, was not sufficiently impressive to attract much attention. The Bessemer Limestone Co. made the best hit through the distribution of a briquette in the form of an imitation paving brick in the top of which was located a level and above the level was printed the words "The Brick That is On the Level." This souvenir proved popular and was in considerable demand.

were devoted largely to the questions involved in street paving but, in these discussions, brick played a very small part.

It would appear to us that arrangements should have been made for the distribution, at this congress, of literature of such an elaborate and attractive character as would command attention and insure reading and preservation and it would also appear to us that arrangements might have been made, whereby the cause of brick could have been set forth in a proper manner by competent speakers, during the discussions, at some of the sessions of the congress.

Delegates were in attendance at the Municipal Congress from all the leading countries of the world, there being representatives from such distant countries as Siberia and Japan. The Congress was addressed by many men of prominence, including Mayor Harrison of Chicago, Mayor Fitzgerald of Boston, Governor Dicks and others.

We are told that the Winnebago (Minn.) Tile Plant will install machinery for making hollow brick.

PAVING BRICK'S OPPORTUNITY

The movement so strongly set on foot at the International Good Roads Congress and Exposition, held at the La Salle Hotel, Chicago, during the past two weeks should be taken advantage of promptly and energetically by paving brick interests of the country. The most important work of this congress was in the forming of tentative plans for the construction by the Government of a series of great "national highways." It is believed that this movement is so well organized and has in it such elements of merit as will meet with popular approval and that the hopes of the good roads enthusiasts may be fully realized, through the action of Congress. In case these national good roads are authorized, the question will immediately arise as to the standard of construction to be adopted and if brick interests fail to secure the adoption of brick for the surfacing of these highways, it will be the fault of the manufacturers for there is no question but what it can be shown that brick is the proper material to use and superior to all others for great trunk roads, such as are contemplated.

It is to be regretted that the paving brick interests were not more strongly represented at the recent Good Roads Congress. Five thousand delegates had been named from various states, counties and municipalities throughout this and other countries to attend the convention and a fair proportion of these delegates was present. Nearly all foreign countries were ably represented and many of the men most prominent in the good roads cause took active part in the proceedings. The congress voted to hold its next session in the city of New Orleans.

Another most important subject occupying a prominent place in the discussions was that concerning the use of convict labor for the improvement of the public highways. It would appear that the question of utilizing the labor of state and federal convicts without injury to free labor might be easily solved by a properly planned system for the construction of national highways with such labor. The idea met with such favor that the following resolution was unanimously adopted by the convention:

Resolved, That it is the sense of this convention that all persons serving sentences in any state penitentiary or in any county, city, or town jail, should be compelled to work upon the public roads during the terms of such service. And be it further

Resolved, That to assist in accomplishing the above purposes, the chairman be and he hereby is authorized and directed to appoint a committee of one from each state, whose duty it shall be to investigate conditions with reference to prison labor and the care and management of convicts in each state, to assist as far as possible in securing uniform legislation in the several states for the employment of convicts in road construction and to report at the next meeting of this association.

The good roads movement appears to arouse unanimous interest among the people of the country. Much interest in the recent congress was shown by the people of Chicago, one evidence of which was the setting aside of Sunday, Sept. 24th, as good roads Sunday and the espousal of the good roads cause in many of the Chicago pulpits on that day.

The movement for Federal aid in good roads construction focused in the form of a resolution, providing for a national conference to be held in Washington at the opening of the next session of Congress, to put in concrete form suggestions for legislation on the subject and to insure the introduction of such legislation in the strongest possible manner. The importance of Federal aid was set forth in the addresses of many prominent speakers during the congress. Among the notable expressions on the subject were those of Champ Clark and of Philip T. Colgrove, president of the Michigan Good Roads Association, from which we quote as follows:

"We have in this country 2,150,000 dirt roads. The government

is using 1,000,000 for star routes and rural delivery service. I believe there is a moral obligation upon the government to assist in the building and maintenance of public thoroughfares."

"The direct saving in the taking up of 23,000 postoffices and curtailing the star routes to the government has been nearly \$30,000,000. If our public highways were placed on a par with those of the old world, it is estimated that the cost of maintaining the present rural system could be reduced \$10,000,000 more and the service extended to thousands who are now denied its benefit."

Champ Clark's remarks on the subject of good roads are most forceful and our readers will endorse them. Among other things, Mr. Clark said:

"Bad roads," he said, "have cost the people of the United States, especially the farmers, more in the way of freight rates than the civil war cost."

"The man who will invent or discover a material for making good roads where stone and gravel cannot be had, and who will make them at a reasonable cost, will deserve a monument as high as Washington's."

"It is the crying necessity of the age. We have had the golden age, the steel age, and every other sort of age. What we need is a good roads age."

Several plans for national highways were submitted at the congress. The most comprehensive of which was set forth by Congressman W. B. Francis, of Ohio, who founded his proposition upon a bill already introduced by Senator Cullom, of Illinois.

"This bill contemplates seven great interstate thoroughfares, each to begin at the capitol at Washington, D. C., and described as follows:

"Washington national interstate highway, via Baltimore, Wilmington, Philadelphia, Trenton, New York, Hartford, Boston, Concord, to Portland, Me.

"Roosevelt national interstate highway—To begin at Washington and constructed by the most direct practicable route via Gettysburg and Harrisburg and extend to Buffalo and Niagara Falls.

"Lincoln national interstate highway—To begin at Washington and to pass through Maryland, West Virginia, Ohio (via Columbus), Indiana and Illinois to Chicago, and on through Wisconsin (via Madison) to St. Paul and Minneapolis, and thence through Minnesota, South Dakota, North Dakota, Montana, Idaho and Washington to Seattle.

"Jefferson national interstate highway—To begin at Washington and to be constructed by the most direct route practicable to San Francisco, passing through Virginia, West Virginia, Ohio, Indiana, Illinois, Iowa, Nebraska, Colorado, Utah, Nevada and California.

"Grant national interstate highway—To begin at Washington and to be constructed by the most direct line practicable to San Diego, Cal.

"Monroe national interstate highway—To begin at Washington and to be constructed by the most direct route practicable to New Orleans and thence to Austin, Tex.

"Lee national interstate highway—To begin at Washington and to be constructed by the most direct route practicable through Virginia (via Richmond), North Carolina, South Carolina (via Charleston), Georgia (via Savannah), Florida to Jacksonville and Miami.

"These highways are meant to connect the opulent business and manufacturing cities of the east, the fertile valleys of the central states, the states of the plains, and to scale the Rockies by trails sought out by Fremont, the pathfinder, or 'Old Man Meeker,' who marked the way by stones at intervals and with his ox team and squeaking cart defined the Oregon trail.

"The cost of these roads has been roughly estimated at \$148,000,000, about half the cost of the construction of the Panama canal."

Another plan for national highways calls for the construction of three great trunk roads, one running from north to south and another from east to west across the continent and another to connect the points of greatest historical and scenic interest throughout the country.

Congressman Wm. P. Borland of Missouri urged the support of the bill calling for the construction of a national highway in memory of Lincoln in place of the proposed monument to be built in honor of his memory. It is proposed that this highway be constructed from Washington to Gettysburg.

He says: "This highway will become far more historic than a mere monument." Congress has already appropriated \$2,000,000 for the proposed Lincoln monument.

The pressing need of better roads in the state of Illinois was brought up forcibly, among the discussions during the convention, and it is hoped that these discussions

will set on foot a movement which will materialize in some practical form. Jenkins Lloyd Jones was one of the speakers and referring to the Illinois roads, he said: "I am ashamed to be a citizen of Illinois. The great question of road improvement has been neglected by our politicians and has been subordinated to other and less important interests. If a tithe of what we spend for other matters had been spent on the highways, we would be much further advanced in civilization and progress than we are today."

Other speakers suggested the concentration of local expenditures and local road authorities into organizations of more practical nature.

This movement for the improvement of Illinois highways has been espoused energetically by some of the paving brick men of Illinois, especially by Mr. Eben Rodgers, of Alton. The Illinois situation presents another important opportunity which paving brick men should not neglect.

THE DETROIT PAVING MUDDLE.

It is to be hoped that some good will come from the controversy and investigations regarding the brick paving, which has created such a sensation in Detroit recently. All the resources of the main office of the National Paving Brick Manufacturers' Association have been called into play to assist in this investigation and the officers of the Association have contributed much of their time to assist in settling the matter. The trouble began through the vetoing, by the mayor of Detroit, a number of bills for paving brick, the mayor declaring that the brick were not satisfactory nor up to specifications. The agitation which followed resulted in the appointment of a state investigating committee, which undertook a most elaborate investigation of the entire matter. The committee called to its aid experts and had brought before it a large number of witnesses to cover all phases of the controversy. Much of this discussion was mentioned in the last issue of "Brick and Clay Record" but newspaper reports show that the battle still continues and up to the day of going to press, the trouble has not been settled and the committee has not yet made its report. The mayor continues to hold firm on his vetoes and the Deckman Duty Co., of Cleveland, O., threatened to take the matter at once into the courts on their claim for \$5,000 due on unpaid bills for paving brick. At the same time, the city is considering the advisability of suing the Massillon Brick Co., of Massillon, O., to force delivery of brick called for in a contract with the city. It is claimed that the contract calls for the delivery of 1,000,000 brick and that up to date the company has furnished only 176,000 brick.

Some of the board of aldermen favor the passing of the brick bills over the head of the mayor.

A special investigation of Detroit's brick paving was made upon request of the committee by W. P. Blair, secretary of the National Paving Brick Manufacturers' Association. This investigation was very exhaustive and the report of considerable length. In it Mr. Blair criticises very bitterly the character of the paving work done but declares that the brick delivered are of excellent quality. He criticises severely Detroit's method of paving and lays all the blame of unsatisfactory streets upon the faulty methods. In reply to this report Commissioner Haarer, of the department of public works, takes exception to practically everything Mr. Blair stated in his report. He says he believes the report was a defense of the brick makers at the expense of the public works department and among other things said:

"If I wanted to find out whether a certain kind of beer

was good or bad, I would not ask a minister to make the test."

Mr. Haarer is evidently decidedly prejudiced, for he said if he had his way, not another brick would be laid in Detroit and he would use asphalt, creosote and granite block exclusively. It is quite apparent that Mr. Blair is honestly prejudiced in favor of brick and Mr. Haarer, in view of his expressed opinion, cannot stand as a model of saintly integrity.

All who know Mr. Blair know that he acts in the most conscientious manner and that his report must have been entirely honest and sincere and based entirely on facts, which he is able to prove beyond question. Among other interesting things, Mr. Blair said:

"With a few unimportant exceptions the paving brick shipped to Detroit have been first-class in quality and aside from the city's governmental system which precludes team work, the defective brick pavements are mainly due to three leading causes—faulty specifications, bad construction of foundations, and the constant tearing up of the pavements for the purpose of laying water mains, gas pipes, wire conduits, sewers and other things without replacing them properly.

"I have had occasion to observe pavements in hundreds of cities," said Mr. Blair, "and I have never seen one where the pavements were cut into with half the recklessness and freedom as is the case here. In addition to that, the pavements are not as a rule put back as they should be, and the result is that some of your pavements look like the pants of the comic magazine farmer, covered with conspicuous patches.

"You have in Detroit only 77 brick streets on which the brick are laid on fresh concrete, and you have 143 streets which have been resurfaced with brick, that is, the brick laid on old concrete foundation that was put in years ago. Many of those old foundations were made of natural cement and are utterly inadequate. For instance, I found one street where the concrete was only about an inch and a half thick, and how could any one expect to have a good brick surface on a base so frail, no matter how good the brick might be?"

In criticising the specifications used, Mr. Blair stated that they "lack that quality of direction as to details which is exceedingly desirable." He also found fault with the specifications in the following particulars: "They did not provide that the brick should be laid 'best edge up.' They did not require the dampening of the brick surface before the application of the filler. The contractor was not required to have suitable tools."

Among other complications Corporation Counsel Halley declares that the mayor has the entire legal right to veto contracts entered into by commissioner of public works and veto the bills for material if he believes the contracts were not filled in the proper manner.

An interesting opinion regarding brick paving is given by County Road Commissioner John S. Haggerty, who says:

"One trouble about paving brick and an explanation of failure to stand the rattler test lies in making paving brick too large. You can't bake big brick evenly to a center, and while baking through the outside the big brick is made hard and brittle. Big brick is desirable for pavement to save cost in laying, but small brick wear longer. Look at places in the Griswold street pavement where small brick were used, and laid 18 years ago, and you will see that the small brick, while depressed in spots, are still in good wearing condition."

Attorneys for one of the brick companies whose bills have been vetoed by the mayor declare that the veto has no force. The claim is made that Mayor Thompson should have vetoed the contracts when first entered into, and that he cannot now insist upon a 21 per cent abrasion test.

NEW MANAGER.

G. Meyers, formerly in charge of the Livermore Fire Brick Co.'s plant at Livermore, Cal., is now manager of the Oakland paving brick plant near Decoto, Cal., his former position being occupied by E. Holloway.



BAD CONCRETE PIPE FAILURE.

The following communications which have been received relative to serious concrete tile failures in Iowa, were sent to us by a prominent Iowa tile manufacturer, who vouches for their reliability, one being from a county auditor, who went with the inspector to investigate, and another from the engineer who approved of the tile before they were laid and who had no reason to exaggerate the situation, as he is liable to be held liable for the loss. The letters follow:

Spencer, Iowa, Sept. 4, 1911.—A careful examination has just been completed of the concrete tile used in Drainage District No. 5, Clay County, Ia. The interior of the large tile drain was explored by instruction of the Board of Supervisors, acting on complaint of the farmers in the District, and it was ascertained that sixty-five per cent of the tile were cracked and beginning to deteriorate. These concrete tile had been carefully inspected by the engineer before they were laid. The condition of the tile is such that work will have to be done over again from the beginning. Cement tile were used on petition of a number of the land owners in the District, who said the work could be done ten per cent cheaper if that class of tile were used.

Emmetsburg, Iowa, Sept. 9, 1911.—It has been found that County Drainage District No. 12, in Palo Alto County, southwest of Emmetsburg, Ia., is in very bad condition. This is a large district, for which cement tile were made by the contractor in a factory built near the work. There was some complaint while the work was in progress and some tile rejected, and the contractor was instructed to use more care. It now develops that the tile are filled with dirt and many cracked and going down and in bad condition generally. The work has been completed only a few months and settlement has not been made in full. Some question, however, exists as to whether the bonding company can be held, should the contractor fail to comply with the instructions of the Supervisors, sent him by registered letter, to clean the tile and make all necessary repairs. It is reported that the entire work will have to be done over again, owing to the cement tile going down so rapidly. Land owners in the District are beginning to realize that land values will be very seriously affected, even though the repairs be made, as there will continue to be doubt as to whether the cement tile will be permanent, should the relaying of the ditch be done with that class of material.

Ruthven, Iowa, Sept. 2, 1911.—Owing to the fact that cement drain pipe used in one of the Palo Alto County Districts, near Mallard, and also in one of the districts in Clay County, are reported to be cracking and decaying and likely to be a total loss, the county engineer is grading the cement pipe now being laid very closely. Twenty-five per cent of the material furnished by the cement factory at Emmetsburg is being rejected on the ditch bank and strict orders given that better material be furnished. Mr. Middleton, the manager, declares that the Palo Alto Board and his regular customers have made no such objections, but in view of recent developments Clay County will take no more chances, and further cement bids will not be considered by the present Board. The Pocahontas County Board has taken a similar attitude.

EFFECTS OF DRAINAGE.

The following arguments, in favor of the use of drain tile, were offered by one of our interested readers. They are good talking points for the tile manufacturer to make use of.

"There is something astonishing in the effect of drain-

age on growing plants. One can take an ordinary red earthen flower pot with a hole in the bottom, fill the pot with earth, and cultivate plants successfully; but if we undertake to cultivate a plant in a bowl, or any ordinary jar, we fail, owing to the fact that we are unable to get rid of the superfluous moisture. If we take the flower pot and cork up the hole, so as to destroy this arrangement of getting rid of the superfluous moisture, our plants do not flourish, whether we water them or neglect them makes but little difference. The clay soil of a meadow is like the bowl in this particular as it does not allow the rains to penetrate and filter through it, part of the water flowing off over the surface, and part evaporating, but the plants do not flourish.

"The farmer, when he prepares his field for wheat, tries to remedy this evil by ploughing his land into ridges and hollows, thus making surface drains. The earth to the depth stirred by the plough is permeable to water, which finds its way to the surface drains without flowing over the surface to any great extent. The wheat grows best on the center of these ridges, which is the highest part, and scarcely any grows in the hollows. This peculiarity of growing wheat is seen all over the field, and is not only noticeable on marshy lands, but on any ordinary soil resting on clay. Some plants can hardly be made to grow at all on such land, but if this land is drained nearly all of the plants will thrive.

"This drainage as we have just described, consisting of ridges and surface drains, does fairly well for wheat and other grass crops having their roots near the surface, but apples, oranges, grapes and other deep-rooted plants will not flourish without a deeper and more effective drainage. This deeper drainage is composed of channels made up of earthen pipes placed three or four feet below the surface, the experienced farmer placing his drains four feet deep and about forty feet apart, but if the clay is a little adhesive he places them about three feet deep and thirty feet apart."

DRAINAGE TO RECLAIM SOUTHERN LANDS.

It has become a well established fact, that the lands in the lower Mississippi valley are among the most fertile in the world, rivaling those of the famous Nile valley. It is also realized that this region has attained but a small measure of its possibilities, owing to the many swamps which are awaiting the magic touch of "drainage" to make it the most valuable land in the country.

President Roosevelt prophesied most truly when he said that this country (the Mississippi Valley) is destined to become one of the most prosperous and populous in the world. This land is capable of supporting a greater population than any equal area in the Western Hemisphere. It will produce in perfection a greater variety and a larger yield of products useful to man than the soil of any other equal area on earth. When once this land is properly drained there will be no such thing as a crop failure.

The United States Government has successfully demonstrated the practicability of the reclamation of southern swamp lands, not only in Virginia, but in other southern

states as well. It is also true that considerable Delta land has been reclaimed by private capital, land which is already under cultivation and which is bringing its owners handsome returns. But it is nevertheless a fact that the successful reclamation of the Mississippi valley, as a whole must be undertaken by the government, to be entirely successful.

The attention of the people of the north, east and west is being attracted to the Mississippi valley. Capitalists are acquiring large tracts of swamp land and many drainage undertakings are under way and the work is being carried on diligently and intelligently. It is, of course, a fact that as soon as the United States government decides to undertake the work of draining the Mississippi valley, investors and homeseekers will flock south. It would, therefore, appear that this drainage work will open up a market for large quantities of drain tile and sewer pipe and it seems an opportune time for some active campaigning by drain tile organizations.

Over twenty-five thousand acres have been reclaimed in Louisiana in the last few years and at this time, it is said, six private companies are preparing to drain over one hundred and five thousand acres in the same state.

STANDARDIZING PIPE AND TILE.

A most important movement for the standardization of pipe and tile and the adoption of standard tests for pipe and tile has recently been started by the American Society for Testing Materials and the movement culminated in a practical manner by appointment of delegates, representing the various interests who met at the Congress Hotel, in Chicago, on Sept. 28th and 29th.

It has long been the sentiment of clay sewer pipe and drain tile manufacturers, as well as of those particularly interested in sewerage and drainage projects that some definite standard of tests should be generally adopted to permit of greater fairness both to the manufacturers and to the buyers, as there have been, frequently in the past, troublesome disputes arising from the difference of opinion as to the quality of the pipe or tile furnished. The idea is to secure some means for the accurate testing of tile and pipe with the same object in view as the testing of paving brick by the rattler test, now generally used by municipalities.

The delegates, appointed by the Society of Testing Materials to consider this important matter, are prominent men and thoroughly representative of the various interests involved as well as of the public at large.

The clay tile and pipe interests are represented by Mr. J. Leo Child, of the Hancock Brick & Tile Co., of Findlay, O., who is also president of the Northwestern Ohio Drain Tile Association; W. C. Hoover, of the Portland Drain Tile Co., Portland, Ind., who is also connected with the Lehigh Sewer Pipe Co., Lehigh, Ia.; Mr. A. W. Gates, head of the Monmouth Mining & Manufacturing Co., Monmouth, Ill., and Mr. Chas. H. Rossman, head of the Iowa Pipe & Tile Co., of Des Moines, Ia., and one of the most prominent sewer pipe and tile men in that state.

The cement tile interests are represented by P. H. Atwood, of the Armstrong Cement Works; L. S. Bingham, and C. N. Boynton, of the Universal Cement Co., and R. K. Humphrey, of the National Association of Cement Users, a gentleman well known as formerly identified with the U. S. Geological Survey.

The consumers' interests are represented by some of the leading scientists of the country, including Prof. Geo. B. Chatburn, of the University of Nebraska, Lincoln, Neb.; Rudolph Hering, 170 Broadway, New York City; Prof. J. T. Stewart, of the University of Minnesota; Mr. Mont-

Schuyler, engineer in charge of the U. S. Testing Laboratories at St. Louis, Mo.; Prof. Talbot, of the University of Illinois; Prof. F. E. Turneure, of the University of Wisconsin; Mr. B. Williams, chief of the Bureau of Erection of the state of Iowa, and Prof. A. Marsden, dean of engineering of the Iowa State College at Ames, Ia.

Prof. Marsden, who had been appointed as temporary chairman by the Society of Testing Materials, was made permanent chairman of the organization, which was perfected on Sept. 28th. The delegates at their first meeting could only consider the important matters involved in a general way as their action must be of the most deliberating character and will require considerable time for investigation and careful consideration. To handle the subjects involved, in a proper manner, various committees were elected as follows:

Committee on durability: Messrs. Turneure, Talbot, Humphrey, Child and Schuyler.

Committee on the manufacture of clay tile and sewer pipe: Messrs. Hoover, Gates and Chatburn.

Committee on the manufacture of cement, tile and pipe: Messrs. Atwood, Bingham and Porter.

Committee on specifications for the manufacture and laying of pipe and tile: Messrs. Portier, Stewart (chairman), Boynton, Gates and Hering.

Committee on testing: Messrs. Talbot (chairman), Turneure, Schuyler, Chatburn, Rossman, Marsden and Boynton.

These committees are arranging to meet as soon as possible and after due consideration of the various subjects involved, will draw up formal reports and submit their findings at the next meeting of the National Association for Testing Materials.

Many difficulties are involved, especially in the standardizing of tests for drain tile. It is well known that tile made of surface clays will not withstand the same tests as tile made of shale, although it is entirely satisfactory and suitable for the purpose for which it is used and is of a character to withstand use for many years' service. The difficulty will be in adopting a general standard for all classes of clay and cement tile. It is safe to say, however, that the cement people will find some difficulty in producing standard tile that will withstand the tests which the clay men are perfectly willing to submit to, and of tests adopted.

When it comes to the question of sewer pipe, there can be no doubt whatever as to the advantages standardization will bring to the clay sewer pipe interests and the sewer pipe men should be eager to have a high and rigid stand-

DRAIN TILE NOTES.

It is reported that work on the plant of the Springfield (Ill.) Drain Tile Co. will be begun very soon. The land for the factory site was recently purchased for the sum of \$5,680.

The Longmont (Colo.) Brick & Tile Co. are having a railway switch put in at their plant, which will greatly facilitate shipping.

PERFECTED REVOLVING SCREEN.

The Weller Mfg. Co., of Chicago, has perfected a revolving screen for the use of clay workers, which appears to be entirely satisfactory for the purpose for which it is intended. Its particular use is for screening sand and gravel, although it can be adapted to other purposes. The jacketed sand screen has an inner screen made of $\frac{1}{4}$ -inch plate 36 in. in diameter. The outer screen is made of wire cloth 48 in. in diameter and 8 ft. long.



A DIFFERENCE OF OPINION.

In our issue of September 1st, an article appeared, under the title of "Faced with Terra Cotta," which has caused some criticism and called forth a letter from Edward H. Putnam, publicity manager of the Atlantic Terra Cotta Co., of New York City, in which the following statements were made:

"In your issue of September 1st, I wish to take exception to the article on page 185, under the caption 'Faced with Terra Cotta.' My exception is that it is my opinion, judging from past experience, that the tone of the article is apt to create the opposite impression from the one desired. Your ingenuous statement that architectural terra cotta was a good imitation of stone was probably about the worst thing you could have said if your intention is to forward the terra cotta trade. Of course, we realize that some architects use terra cotta because it is less expensive than stone, but the best use it frankly as terra cotta, taking advantage of its peculiar properties. This is the use which raises terra cotta, to the dignified plane where it belongs, and it is this use that should be encouraged in every possible way.

"Please do not misunderstand my attitude in this criticism. I am carrying a pretty wide publicity campaign, and of course, such publicity results advantageously to all terra cotta manufacturers. Atlantic Architectural Terra Cotta is not made with the intention of 'deceiving the closest observer,' and I do not believe many grades are."

Now, the interesting part of the matter is that the article, in question was printed, at the request of the company that made the terra cotta used in the building under discussion, the Humboldt Bank Building, at San Francisco, to correct the impression left by an article in the issue of July 15th, "The New San Francisco, City of Clay," in which the building was mentioned as being constructed mostly of other than burned clay materials.

In the letter of explanation from the Steiger Pottery Co., of San Francisco, the statement was made that the terra cotta in the building imitated stone so perfectly, as to even deceive architects, who are presumed to be authorities in such matters. There seems to be a difference of opinion as to whether the comparison is complimentary to terra cotta or the reverse. As to the fire resisting properties of the two materials, it has been amply proven by investigation, after great fires, that terra cotta comes forth from the flames unscathed, while stone crumbles and disintegrates. Terra cotta being a child of the fire, having been thoroughly burned and vitrified is able to withstand intense heat with comparatively small injury to its surface, which is in a human sense indestructible by the elements and is little affected by the passing years.

We would be pleased to have those interested discuss the matter more thoroughly in this department.

EXTENSIVE USE OF BURNED CLAY.

It is interesting to note, that in the construction of the new Hudson Terminal Building, the largest office building in the world, an enormous amount of burned clay products were used. In building the walls, above the street level, 16,300,000 brick were necessary; 1,300,000 square feet of hollow tile fireproofing and 95 miles of conduits were also among the clay products, noted among the interesting statistics given out by the contractors, who built this wonderful building.

EXCEEDS LAST YEAR'S RECORD.

Our Pittsburg correspondent states that notwithstanding the fact that trade has been just a little off in the brick building lines, the bookings made by the National Fireproofing Co., of that city, for the year to date far exceed those of last year to the same date.

All of the 26 plants of the National Fireproofing Co. are in operation, and orders still on the books indicate that these properties will be kept on the active list for some months to come. This is said to be the first time in the history of the company that all of the plants of the National Company have been working at the same time. Some of the best orders for fireproofing materials the company has booked recently were from Chicago and other western sections.

TERRA COTTA SAVES MONEY.

A saving of over \$500,000 was effected in the cost of building the State Educational Building at Albany, N. Y., by making the decorative parts of the structure of terra cotta instead of chiseled marble, declares the August Popular Mechanics Magazine, in an illustrated article. The columns and other plain parts were made of marble, and the capitals and other ornamental features were made in terra cotta finished in glaze to match the natural stone.

There were 28 columns used in the building, and the capitals for them are the largest ever made of terra cotta. These capitals are said to have cost \$400 each, as against an estimated cost of \$2,400 each for the same work in carved marble, thus showing a total saving of \$56,000 on the capitals alone.

GET GOOD CONTRACTS.

Two Pittsburg concerns were awarded good business, when contracts were recently let for the parts of the New Statler Hotel, which is to be built in Cleveland. The National Fireproofing Co., having been given the fireproofing, while the ornamental terra cotta will be furnished by the Atlantic Terra Cotta Co., which also has offices in the Fulton building, Pittsburg.

CANADIANS BUY PLANT.

The "Washington Times" states that the terra cotta company's land, containing about thirty-one acres at Terra Cotta, D. C., was sold at auction on Monday, Sept. 11, for \$30,110. to Frank B. Allen, representing a Canadian company, the headquarters of which are in Toronto. Mr. Allen also bid in the brick-making machinery for \$12,500.

The factory was operated, until its failure, by the National Stone and Brick Co. This company purchased the property from the National Fire Proofing Co.

The National Fire Proofing Co. operated the plant for some time as a fire-proofing manufactory. When the fireproofing clay was exhausted the plant was sold to the National Stone and Brick Co.

The three buildings for the State Normal School, to be erected at Hattiesburg, Miss., are to be built of face brick and steel, and will cost \$178,591.



GENERAL POTTERY NEWS.

East Liverpool, O.—Sept. 27.—Some of the domestic pottery manufacturers in the East Liverpool district were put to no small inconvenience recently because the kilnmen in several plants made an effort, it is said, to secure changes in working conditions, other than those agreed upon at the joint wage conference held in Atlantic City, during the early part of August.

The kilnmen had representation in the workers' convention, and also when the joint conference was in session. However, those at "home" after the conference was over were not satisfied, and it is said the kiln crew of one plant walked out. A small plant was chosen, for it is admitted that if the men had "won" in this small plant, there would have been a chance of gaining similar points in all other potteries.

The joint arbitration board told the kilnmen they did not "have a leg to stand on" and then the kilnmen appealed to President Edward Menge of the National Brotherhood of Operative Potters. It is currently reported that he told these men that they need not expect any assistance from the Brotherhood, that they were in the wrong in violating agreements after they had been promulgated and that they should return to their benches. The manufacturers stood ready to back up the small manufacturers, in the event an effort would be made to force the issue.

The work has been begun of rebuilding the plant of the Universal Sanitary Pottery at New Castle, although it was presumed some time ago that the company would take over the property of the former New Castle China Co. The new plant now being built will cost upwards of \$100,000. Employment will be given to about 150 men. President C. J. Kirk is authority for the statement that the plant is expected to be in running order before the end of the fall season. Floors will be of non-burning material and the five buildings will be of brick construction.

The Earthenware Specialty Co., of Trenton, N. J., is now in control of the former plant of the Bell Pottery Co., at Columbus, O., the purchase price having been paid and the deeds, which traveled through five states and then into Canada for signatures have been returned and passed over to the Trenton interests. A good force of workmen are now engaged on the plant preparing it for operation, their task, it is said, will be completed within a month. The addition of this property will give the Trenton interests more than double their previous capacity in the manufacturing of sanitary and plumbers' specialties.

The Keystone Pottery Co., of Crooksville, is erecting a new kiln shed occupying a site 50 by 150 feet.

With the completion of their new plant at Evansville, Ind., the Helfrich Pottery Co. has taken out incorporation papers with a capital stock of \$15,000. This concern is the largest producer of sanitary ware in the western district, and is operating two plants together with one or two specialty plants. The directors of the Helfrich Company are: Adam Helfrich, H. F. Weaver, S. E. Meagher and W. A. Henn.

The Shenango Pottery Co., at New Castle, has secured the services of a Mr. Doncaster, as chief engraver. He

came into the western territory from the Trenton, N. J., district, where he has been located for many years.

The Gladding-McBean Pottery Co., at Lincoln, Cal., has enlarged its plant, and improvements under way will cost, it is reported, in the neighborhood of \$40,000. Additional kiln capacity will be provided. Buildings will be of steel frame construction.

Negotiations have been closed at Marshalltown, Iowa, which will result in the purchase of the large pottery plant of the Red Wing Union Stoneware Pottery Co. After the purchase, the property will be remodeled, and will be converted into a mammoth sewer pipe plant. Operations will be conducted under the name of the Marshalltown Vitrified Sewer Pipe & Tile Co. Warren Overpack and F. J. Gary, of Medicine Hat, Alberta, are back of the new company which will have a capital stock of \$300,000, of which about \$75,000 will be spent in remodeling and the purchase of new machinery. Mr. Gary will manage the property, he is a nephew of Judge E. H. Gary, of the United States Steel Corporation.

Considerable importance is attached to the incident of the United States Government sending a commission into the foreign pottery districts to obtain data which will have more or less bearing upon the future of the industry in the United States. For many years, the American pottery manufacturer has contended that a considerable amount of imported ware was being received and admitted into the ports of entry at a figure less than they should be.

Recently, President W. H. Taft announced at Washington that the Tariff Commission would be in a position to present a detailed report within a few months, and those who are interested in the advancement of the American pottery industry are eagerly awaiting the results obtained by the representatives of the commission on foreign shores.

The passage of a nine-hour working law for women in Ohio may have a rather serious effect on the women employed in all potteries in Ohio. There are many women employed in the potteries who work 10 hours, and there are still others who need all the work they can obtain, and it is workers of this class that say that the new law will work a hardship upon them. The manufacturers can do nothing but obey the law, and see that it is enforced, the office of State Inspector of Factories and Workshops is working assiduously.

It is not many years since Akron, O., boasted of possessing two of the best potteries in the country, but that town has lost its reputation as a pottery center. Financial difficulties caused the Akron China Co. to give up its business, and now comes the story that the Summit China Co. is going to quit that town. The company has been reorganized and will hereafter be known as the Macon China Co. The business will be removed from Akron to Macon, Ga., where the chamber of commerce of that place has granted the Akron people a large bonus, both in cash and realty, it is said. Plans for an eleven-kiln plant, to be erected in Macon by this company, are being drawn by an architect in Cleveland, O. Construction work will be begun at an early date, and it is possible that the new pottery will be ready for operation ere the current year ends.



ONE OF THE MICHIGAN GROUP.

The Flint Sandstone Brick Co, has recently installed a wet and dry grinding process at its plant, located at Flint, Mich., on the Pere Marquette Railway, which, it is expected, will eliminate a great many of the troubles formerly experienced, which were largely due to the work of the elements. The plant, which has been out of commission the greater part of the past year, has resumed operations and is now filling an order for 1,300,000 brick to be used in the construction of the Olds Motor Co.'s building at Lansing, Mich.

The 27 acres of land surrounding the plant afford an abundance of sand and gravel. The sand, which is of a light gray color, tinged with red, lays in strata, a layer of pure white sand often being found between layers of dark gray gravel.

eter, made by the American Company, holds 22,000 brick. Each cylinder has a 36-inch track, running the entire length of the cylinder, which is heated by a 1½-inch steam pipe, in which small holes are drilled about four inches apart and turned downward so that the live steam will not injure the brick. Ten hours are required for the hardening process, during which time an average of 115 pounds of steam is kept up.

A 90-h.p. Corliss engine and two boilers of 100 and 150 horsepower supply the motive power, while a 15-h.p. American Blower engine, direct connected to a Westinghouse 17-k.w. generator, supplies the power for lighting the plant.

Only the natural gray silicate brick have heretofore been made at this plant, but since the equipment for the new process has been installed, the company are preparing to



Well-arranged Plant of the Flint (Mich.) Sandlime Brick Co.

The main building is built of brick and is 100x75 feet; adjoining it is a frame sand shed 100x50 feet, and the frame shed over the brick track near by is 175x30 feet.

The sand is hauled to the plant in dump cars on an industrial railway, where it is dumped into a storage shed with a capacity of about 3,000 cu. yds.

A combination of wet and dry pans is used in preparing the materials, one being a 9-ft. pan of the American Clay Mchy. Co.'s make. Since the wet pan has been installed, the use of the pulverizer and pugmill has been discontinued.

The brick are molded in two Berg 4-mold standard presses, with a capacity of 22,000 per 10-hour day, two sets of "pickers" being necessary to tend each machine.

Bucket elevators—Gandy belting shaft driven—are used for conveying the material from the pans to the presses.

The brick are hardened in three large cylinders, two of which are 48 ft. long and 6½ ft. in diameter, holding 11,000 brick each; the other is 78 ft. long and 6½ ft. in diam-

eter, made by the American Company, holds 22,000 brick. Each cylinder has a 36-inch track, running the entire length of the cylinder, which is heated by a 1½-inch steam pipe, in which small holes are drilled about four inches apart and turned downward so that the live steam will not injure the brick. Ten hours are required for the hardening process, during which time an average of 115 pounds of steam is kept up.

The plant was established in 1904, and was enlarged in 1909, when another unit was added and other additions made.

It will be remembered that the Flint Sandstone Brick Co. furnished 25,000,000 brick for the Buick Motor Co.'s immense works at Flint, Mich., which was shown in a former issue of this journal.

The officers of the Flint Sandstone Brick Co. are: Wm. E. Wood, president; C. S. Mott, secretary-treasurer, and J. M. Hammond, vice-president and sales manager.

QUESTIONS AND ANSWERS.

One of our readers, Mr. T. Clive Sheppard, of La Paz, Bolivia, wrote us, asking the following questions:

1. Are sand-lime brick used for paving in any part of the United States, and with what result?
2. Are sand-lime brick used for sewer work in any town

or city of the States, and do they stand the friction of running water?

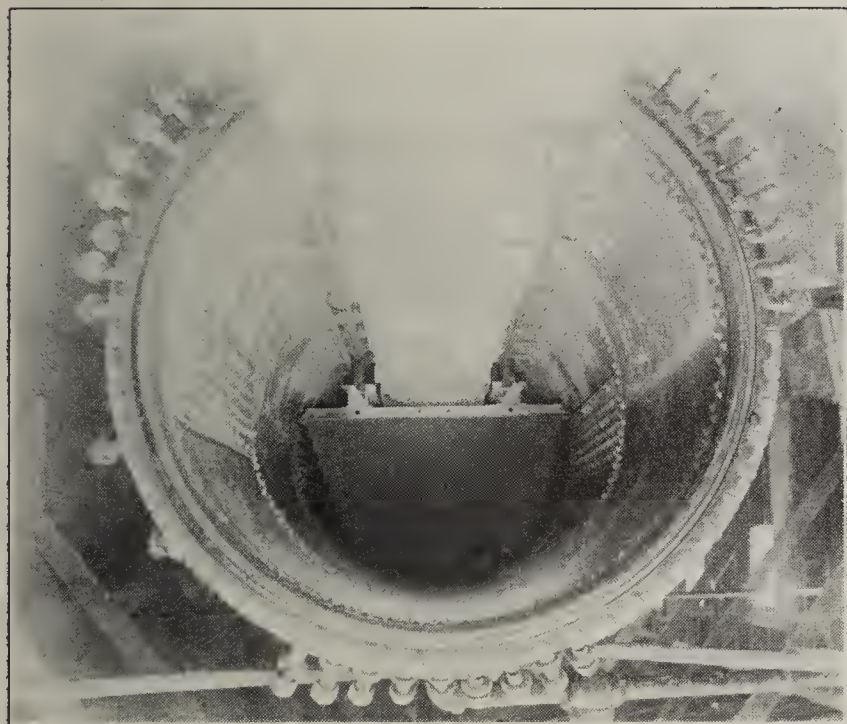
3. Is there any chemical process for hardening sand-lime brick, without steaming it in a chamber, in practical use in the United States or any other part of the world?

These questions have been answered, by W. E. Plummer, Jr., the worthy secretary of the "American Association of Manufacturers of Sand-Lime Products," as follows:

1. So far as is known to the writer there has never been any street paving done with sand-lime brick. There has, however, been quite a little sidewalk paving done, with sand-lime brick, some of which has been very satisfactory and some has failed. The writer built two sidewalks of sand-lime brick, which have now been in use, during two winters, and in both instances they have stood the frost and cold without failing.

2. The largest amount of sewer work built of sand-lime brick which is known to us is that which has been made in Syracuse, N. Y. To find out the particulars relative to this, address Mr. M. K. Squiers, Paragon Plaster Co., Syracuse, N. Y., who also has sold quite a large quantity of these brick for conduits in connection with electrical work.

3. There has been no successful machine put on the



78-foot Hardening Cylinder, Made by the American Clay Machinery Co.

market in which sand-lime brick were hardened by other than steaming process, but there is now being offered to the public, a process by which other material besides sand is made into a mixture and burned, making what is termed a "vitrified sand-lime brick" or "silica brick." This is being put forth by the Vitrified Silica Brick Co., of Toledo, Ohio.

THE ONLY SUCCESSFUL ONE.

Since the Auburn Wagon Co., of Martinsburg, W. Va., began the manufacture of their special dump wagon for the brick trade, they have found strong demand for such a wagon, showing that it was needed in the industry. In every case, those who have purchased the Martinsburg brick wagon have been extremely satisfied with the work which it performs, its appearance, strength and durability. One of these satisfied customers is the Simons Brick Co., of Los Angeles, Calif., which writes as follows:

Los Angeles, Cal., August 25, 1911.

RED RIVER VALLEY BRICK CO., GRAND FORKS, N. D.

Gentlemen:—Replying to yours of the 19th, will say that the Auburn Dump Wagon, you refer to, is in every way a success. The material in the wheels and in the hubs is about the same as that in the Bane or Schettler, in fact it is the only successful dump wagon for hauling brick that has ever been put on the market.

The bed for the size we have will haul 1,500 brick. For hauling wood will say that they are all right, as you can fill the box full, put up standards, and dump your load.

These wagons are all O. K., and we do not hesitate in saying so. Your truly,

SIMONS BRICK COMPANY.

Among the particular merits of the Martinsburg brick wagon are the ease with which brick can be dumped "on the job." It only requires a minute to dump the wagon and it leaves its load nicely stacked up without chipping a brick. The wagon can be fully loaded in ten minutes so it can be seen that a large amount of labor cost is saved in this manner of loading and unloading alone. The wagon is easily handled "on the job" over the roughest kind of ground and is strong enough to stand any amount of abuse, it being as its users claim, almost indestructible.

Another advantage, to the brick manufacturer and dealer in having such a wagon is its advertising value for it pays to deliver brick in a wagon of which you need not be ashamed.

IN THE STIFF-MUD FIELD.

The Wellington Machine Co., of Wellington, O., long prominent in the soft-mud branch of the clay industry, have increased the extent of their line and have placed on the market a new stiff-mud machine which includes many features of exceptional merit. It must not be understood that the No. 2 Wellington machine is by any means in the experimental stage, the machine having been thoroughly tested out on a practical basis and is performing actual work, at the present time, in important brick yards. The reputation of the Wellington people is very high and it is certain that they would not put out a machine which was in any way unsatisfactory.

The Wellington No. 2 is suitable for the manufacture of either tile, brick or hollow block. The manufacturers claim for it a separate auger arrangement, in the form of an effective double shaft pug mill, doing the combined work of pug mill and brick machine, saving floor space, power and belting as compared with the method of operating separate machines. It has double pug shafts with the knives revolving toward each other and interworking—the most effective arrangement. It has a very satisfactory forced feed, formed by the pug mill knives meeting over the main cylinder and working with the knives on the auger shaft, forcing the clay down into the auger below.

The bearings are all extra long and those near the pug mill and clay cylinder are provided with packing gland entirely preventing the clay working into the bearings. At the end of each pug shaft, on which are the gears, there is an out-bearing box to support the ends of the shaft, thus placing the gears between two bearings which greatly strengthens the machine. The length of the pugging tub is 7 ft. 1½ in. with a depth of 18 in. and a width of 28 in. The length of the machine over all is 19 ft. 7¼ in. and the height to the top of the pug mill is 49 in. The friction clutch pulley operating the machine is 48 in. in diameter with a 12-in. face. The weight of the machine is about 12,000 lb. and its capacity is from 30,000 to 50,000 brick per day. The friction clutch pulley is one of particular merit, being very strong and reliable. The manufacturers recommend the use of the smooth roll crusher combined with this machine and especially where same is used for the manufacture of tile and for clays which need some preparation before going to the pug mill.

BUYS DITCHING MACHINE.

The Buckeye Traction Ditcher Co., of Findlay, O., has been given an order for one of its largest machines to be delivered to the Southern Brick & Tile Co., at Louisville, Ky.

GASOLINE HAULAGE MOTORS.

Realizing the need of an independent haulage motor for mining use, the Geo. D. Whitcomb Co., of Rochelle, Ill., began in February, 1907, to experiment with a view of developing and perfecting a gasoline driven mine motor. The first motor was built and shipped to one of the coal mines in Southern Illinois where a line of experiments was conducted. This first motor proved defective in a good many ways, therefore as a result of the tests was laid aside.

In October, 1907, a second experimental motor was built and sent to the mines of the Bevier Coal Co., Cleaton, Ky. This motor was a great improvement over the first motor built and did nice work. The main trouble, however, was that it would not stand up to the hard work incident to mining operation, and would often break down. The difficulty was that the engine, transmission and working parts were too much on the automobile type and were too light to stand up under the heavy work. There was nothing heavy enough available on the market, therefore, in the fall of 1909 the Whitcomb Company, began to design and build a line of motors, including engines, transmission, and everything that goes with the machine, keeping in view, particularly, mining and contracting operations, where weight and great strength were needed.

The first machines of this type were put in the mines early in 1910 and are still in operation. Further improvements, however, were made, weak points strengthened, and at the present time between forty and fifty of the mining type motors are in operation doing everyday work and handling a large tonnage. At the mines of the Southern Coal & Mining Co., near Belleville, Ill., on Sept. 13th a six-ton motor handled 2,000 tons of coal on a 1,500-ft. haul in eight hours' time.

The general design of the machine is quite similar to the standard design used on the electric mine motors, the machine being built up with two heavy side frames connected at each end with heavy bumpers. The machines are equipped with four-cylinder, four-cycle, horizontal opposed engines; these engines are of exceedingly heavy and rugged construction, weighing from three to four times as much as the automobile engine of the same size or power. The motors are all equipped with engines large enough to slip the wheels when in low gear without stalling the engine. Therefore, there is no lack of power for doing the work and the motors will either pull the load or slip the wheels, the same as a steam engine.

The transmission in the mining type of motors provides for two speeds, both forward and reverse, as the motors run equally well in either direction. The low speed is four miles per hour at a normal speed of about 500 r. p. m. of the engine while the high speed is eight miles per hour at a normal speed of about 500 r. p. m. The forward and reverse motion are secured by a double set of clutches controlled by one lever, so that the machine can be driven in either direction by simply shifting the lever from one side to the other and is instantly available. The high and low speeds are secured by means of two heavy jaw clutches that are controlled by a single lever. There is an interlocking device between the high and low speed clutches and the forward and reverse clutches, so that the high and low speed clutches cannot be shifted except when the forward and reverse clutches are in neutral position and there is no drive from the engine; therefore, there is no shock or jar when the clutches are shifted from high to low gear or vice versa.

Upon the ends of the shaft, on which are located the high and low speed clutches, are two sprocket wheels.

From these sprocket wheels there is a double chain drive down to the front axle; from the front axle to the rear axle there is a single chain drive so that all four wheels are drive wheels. The axles are made of standard car axle stock. The axle boxes are of the ordinary railroad type; axles, bearings, etc., are very large. All of the gearing, clutches and sprockets used in the machine are made of steel forgings, machine cut and carefully hardened after they are cut. All of the axle sprockets are split sprockets so that they can be removed without disturbing the wheels or axles. The chains are of the roller type with a factor of safety, of from ten to fifteen to one.

The forward and reverse clutches are of the multiple disc type with cork inserts. These clutches present about three times the frictional surface ordinarily used in a clutch to transmit power from the same size engine. The clutches and all of the gearing in the transmission are kept flooded with oil by means of an oil circulating pump inside of the transmission case. On account of the large frictional surface in the forward and reverse clutches and the fact that they are kept flooded with oil, these clutches can be slipped when taking up a load and a long train of cars can be started without any jerk or jar. At the mines of the Pennsylvania Coal & Coke Co., Arcadia, Indiana Co., Pa., a six-ton motor has been handling trips of forty pit-cars.

The present motors are fitted with two water boxes that form the upper sides of the motor. These boxes are hollow, cast-iron boxes into which are fitted baffle plates. In the cover of these boxes is a chambered passage into which are fitted spray heads. Connecting with these water boxes and located on the main shaft from the engine to the transmission case is a Sirocco type of mine fan. This fan discharges the air through two discharge pipes.

For circulating the water there is a small circulating pump. In practice, this pump draws the water from the bottom of the cooling boxes and forces it around the cylinders of the engine. After passing around the cylinders of the engine it passes into cored passages in the covers of the cooling boxes, the water from two cylinders going to one cooling box and the water from the other two cylinders going to the opposite cooling box.

This water passes down through the spray heads located in the cover of the cooling box and drops into the cooling box proper in a sprayed form and the air from the fan passes directly through this spray and comes in direct contact with the water and the baffle plates in the cooling boxes prevent the air from carrying the water out of the cooling boxes.

This system, which is thoroughly covered by patents, has proven so effective that the engine can be worked in low gear for an indefinite period without overheating. It also provides for a system that is very easy to take care of and clean out, which is essential in mining and contracting work where muddy water very often has to be used.

All details of the machine have been very carefully designed and have been thoroughly proven in actual mining operation and the machines are proving so satisfactory that a large number of companies have put in two, three and four motors. The machines are sold under guarantees, in regard to hauling capacities and guarantee test made a condition of sale, which indicates the confidence of the manufacturers in the machines.

These motors would seem to be well adapted for use at clay plants in hauling clay and coal from the mines to the factory, doing away with much of the annoyance accompanying many unsatisfactory haulage methods now in use.

TRADE LITERATURE.

"Building Progress" for September comes up to the usual standard of excellence maintained by this "live wire" in fireproofing matters, published by the National Fireproofing Co., of Pittsburg, Pa. The educational value of this little pamphlet, distributed twelve times a year, is of inestimable value in acquainting the public with the importance of fireproof construction and it contains some very interesting reading excellently illustrated. The Karpen building, illustrated in this issue of "Brick and Clay Record" figures as the frontispiece of the latest issue of "Building Progress."

"The Labor-Saver" for August, issued by the Stephens-Adamson Manufacturing Co., Aurora, Ill., shows the company to be very much alive. On the editorial page some optimism is presented, which shows that this company have great faith in approaching prosperity. This company is taking its own advice and has anticipated the increase of business activity by enlarging its shops and making arrangements for a general revival of business.

That this preparation was necessary is shown by the fact that the shops are full of work, and inquiries and orders booked, fully assure not only a continuance, but greater increase in the business. Practically all of this work is in the nature of extensions and improvements, indicating the confidence of the business men in sound conditions of trade.

"The Principles of Scientific Management," by Mr. Frederick W. Taylor, M. E., Sc. D., former president of the American Society of Mechanical Engineers, is a book, which is the result of Mr. Taylor's investigation in the workshops of Philadelphia and elsewhere for the past thirty years. All of Mr. Taylor's deductions are based on rules of scientific management applied to the various branches of the world's industries. This science applied to brick laying has shown the possibility of revolutionizing the art and applied even to unskilled operations like shoveling and carrying pig iron, its favorable results have been astonishing.

SALES-MANAGER COMMITS SUICIDE.

J. W. Reynolds, aged 30 years, district sales-manager for the Harbison-Walker Refractories Co., at Pittsburgh, committed suicide in a bath-tub in a room at the Ft. Pitt Hotel a few days ago. It was at this hotel, the Brick Associations held their annual meeting in 1910.

When the body was discovered an automatic revolver wrapped in a towel was found. The latter had deadened the sound of the shots, so that there was no alarm when the shots were fired. One bullet entered his forehead, the other grazed his head. Reynolds was well educated, popular with his company and with the trade. No cause for the act has been assigned. He left no "farewell" note. Edwards resided in Edgeworth, an exclusive suburb of Pittsburg.

THE CITY OF NO PANICS.

Alton, Ill., prides itself on the fact that it is "The City That Knows No Panics." Its board of trade, at the head of which is Mr. Eben Rodgers of the Alton Brick Co., is evidently a live organization and is doing a good work in promoting the interests of the municipality. In a recent circular issued by the board of trade, the following advantages of the city of Alton were mentioned: "Cheapest coal in the Middle West," "Transportation by rail and river," "Unequaled raw building materials," "Limitless Water," and "Abundant sites."

Other attractions were also set forth as an inducement to manufacturing enterprises.

HELPING THE SALES.

Every manufacturer of brick is frequently confronted with the problem of how to increase his sales. Sometimes during the best and busiest seasons the demand is so brisk that he forgets that perhaps there is a time coming when stock will pile up and he may be unable to keep the order book properly filled. The wise brick maker, however, will be continually doing something to increase the popularity of his product and to promote his sales, and in line with modern progress, there is a strong tendency now, among brick makers throughout the country, to take advantage of the opportunity offered them by their local papers to preach the gospel of good building construction to their particular public and incidentally to boost their own game through popularizing their product as a building material.

The difficulty in local advertising, however, is that many brick makers have not the advertising knack of knowing just what to say or how to say it. There is no use of spending money for advertising space unless the right kind of talk is put in such space to create the desired impression upon the people who will read it. It is with this idea in view that a well known advertising expert, who has had years of identification with the clay industry, has expended a large amount of time and labor in preparing a series of advertisements, suitable for this purpose, which he has had printed in the form of a book entitled: "Ads That Will Sell Brick." It is thus possible for the brick makers and sellers to secure at a small cost, the brain effort of an ad writer, who has made the subject a life long study and thereby save themselves all the bother of having to write the ads which they need.

The series of advertisements prepared and sold by the Clay Products Advertising Co. has been printed in handsome book form for preservation. There is sufficient margin on the pages to permit memorandums of orders given for insertion and papers used. There is also a series of splendid articles, furnished free of charge in addition to the advertising copy. These articles are short and pithy and suitable for the reading columns of any newspaper and they bring out in the right kind of a way the thoughts that are most salient in boosting brick for building construction, and they form a strong co-operative effort in connection with the advertising.

To permit the preservation of this book; an additional copy is furnished each purchaser, unbound, these sheets to be used in preparing "copy" for the printer.

The advertisements set forth in this book are not only strong in argument but catchy in appearance. Each one has an illustration to bring out the main point in the advertisement in the most effective manner. They are bound to attract attention wherever published. We reproduce one of them herewith to show our readers a sample of the entire series.

The Clay Products Advertising Co., who furnish this complete series of advertisements, sell the book giving copy, designs and reading notices and also the extra copy unbound for the sum of \$5.00. A good ad writer would charge as much or more for writing a single advertisement.

COLORING BRICK.

Brick owes its color to the presence of iron in the clay from which it is formed. Usually 5 or 6 per cent of oxide of iron (ferric oxide) will give a deep red color to brick, a higher percentage giving a deeper color. The presence of carbonates of lime and of magnesium will modify the color.—Exchange.



Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers— Market Fluctuations and Industrial Prospects

SPARKS FROM THE WIRES.

The brick plant formerly owned by Mr. Z. Spinks, at Whitney, Fla., has been purchased by the Ocala (Fla.) Lumber & Supply Co. Active operation of the plant has already begun.

We are advised that the Johnsonburg Vitriified Brick Co. are closing out their stock of paving brick, on hand, and expect soon to dispose of their plant at Johnsonburg, Pa.

A brick yard that never made brick, a railroad that lacks a right of way are monuments to the business methods of Mrs. S. F. Moore of East Cleveland, Ohio, according to the "Cleveland Press." Mrs. Moore borrowed \$20,000 from the Perrysville (O.) Banking Co. to promote a 31-mile railroad from Sperrysville, Va., to Washington, Va., and a brick plant at Perrysville. On account of the failure of her schemes, the bank was obliged to make an assignment, as the deposits of the bank totaled only \$42,000.

A \$50,000 personal injury suit has been filed against the Standard Brick Co., of Milwaukee, Wis., by Eli Madalitz, a switchman, for injuries which he claims he received when he was knocked from a car, by a large chunk of clay which fell from a car which was being used to transport clay from the clay beds to the plant. He claims the car was overloaded. He fell under the wheels and his right leg was cut off above the knee and his left leg and hip injured.

The Westchester Unit Brick & Tile Co. has been incorporated, at Tuckahoe, N. Y., with a capital of \$45,000, consisting of shares of \$100. The directors are: H. B. Weisse, P. J. Weinberber and Ronald C. Lee, of New York City.

A committee to ask the Interstate Commerce Commission to reduce the freight rate on bricks was appointed by the directors of the Building Association of America.

An order was recently issued by the mayor of Baltimore, Md., that all repair work on cobble-stone pavements be stopped. The inference is that the mayor desires to use the appropriation for the laying of new pavement.

The Independence (Ia.) Brick Co. are using a different stratum of shale than that in general use and we are told, are producing a very superior quality of paving brick and some very distinctive shades in face brick.

A recent flood, said to be the most serious in many years caused much inconvenience and considerable loss to the plant of the Beaver Falls (Pa.) Art Tile Co. The loss is expected to run into the thousands.

The Minonk Brick & Tile Co., of Minonk, Ill., has added to its mechanical equipment, which will make possible an increase in its present commendable output of six cars a day.

The Illinois Drain Tile Co., with headquarters at Albion, Ill., is the title of a new corporation for which application papers were filed at Springfield, with an announced capital stock of \$20,000. The applicants were James C. Carlyle, superintendent of the Albion Vitriified Brick Co.; George C. Ziegler, of Carmi, and Samuel A. Ziegler, cashier of the Albion National Bank. It is said the site of the old Edwards Vitriified Brick & Sewer Pipe Co., near the line of the Southern Railway, will be used. Considerable new machinery will be installed, it is said.

The International Brick, Tile and Terra Cotta Workers' Union held its annual convention at Belleville, Ill., during the week ending September 23d. The organization pledged its support to the striking employes of the Purington Paving Brick Co. of Galesburg, Ill., who have been out for the past eighteen months. It is said that between 400 and 500 men are affected.

The "Consular and Trade Reports" states, that owing to recent sanitary regulations, adopted in Colon, the use of tiled floors is being extensively introduced there. The bulk of this flooring is imported from Italy and Spain although small amounts have at times been secured from Venezuela and Colombia. This would seem to be an opening for American manufacturers to establish agencies there, as shipment could be made cheaply from this country. It is said, a native company has begun the manufacture of floor tile, in Panama, which is sold at \$2.25 to \$3.00 per sq. meter. Further information may be obtained from the Bureau of Manufactures or from the American Consul at Colon.

The Manitoba White Granite Pressed Brick Co. was recently organized at Winnipeg with a capital of \$125,000.

The W. C. Terrell Brick Co. is installing additional machinery at its plant in Birmingham, Ala. This company reports building prospects exceptionally bright and the demand for brick good in that locality.

The city of Lafayette, La., is reported to be in the market for \$1,000 worth of sewer pipe.

The Syracuse Unit Brick Co. has been incorporated with a capital stock of \$240,000 for the purpose of manufacturing brick, tile, etc., at Syracuse, N. Y. Those interested in the company are W. P. Hart, Syracuse, C. F. Lane, Detroit, Mich., and J. D. Meehan of Syracuse.

It is reported that B. F. Fisk of New York represented by J. J. Willett of Anniston, Ala., has purchased sixty acres of land at Gadsden, Ala., as a site for a brick and tile plant.

It is reported that Wm. J. King, proprietor of the Grand Blanc (Mich.) Tile & Kiln Co. was severely burned when a tile kiln exploded recently.

Peter Mallores has filed suit against the Hubbard & Chamberlain Brick Co., of Los Angeles, Cal., for \$25,000 damages for injury sustained to two fingers by an accident while replacing a cable.

It is reported that several new buildings are now under construction at the brick yards recently established between Nashwauk & Swan Lake, Minn.

We are advised than an order has been placed with the Depere Brick Co., of Neenah, Wis., for 1,000,000 red brick to be used in the construction of the new Lakeside Company's Paper Mill at Neenah.

The Grand Rapids Brick Co. has been incorporated at Grand Rapids, Mich., with a capital of \$12,000 by Wm. Scott, J. D. Hamilton and Wm. Knuth.

It is reported that a terra cotta factory will be established in Denver very soon.

The Jackson (Mich.) Brick Co. has recently been incorporated with a capital of \$40,000.

The What Cheer Clay Products Co. has been incorporated at Augusta, Me., with an authorized capital stock of \$500,000. The president is Wm. Farrar, treasurer L. J. Colman, secretary Chas. L. Andrews, all of Augusta. Others interested are J. A. McMahon and G. F. Barcelou both of Mason City, Ia.

The National Tile Co. of Anderson, Ind., has been made a defendant in a damage suit by A. Murphy of that city, who demands \$1,000 for the loss of an eye, which he sustained while employed by the company.

Mr. Sidney Francis has purchased the controlling interest in the Fitchburg Brick Co., Fitchburg, Mass. The company was organized in 1907 with a capital of \$30,000, and at present turns out approximately 5,000,000 brick per year.

Under the title of the Mahoning Brick Co. a company

has been organized at Youngstown, O., with a capital of \$5,000 by S. D. Pearson, C. A. Yacoll, L. M. Yacoll, R. G. McKinley and C. Camp.

Mr. Emil Rohler, manager of the Illinois branch of the Hydraulic Pressed Brick Co., died recently at his home in St. Louis. A cerebral hemorrhage, the result of a fall, caused his death.

The Chamber of Commerce of Marysville, Cal., is making an attempt to locate a brick plant there for the manufacture of clay products.

Mr. Ross Rue, of Alliance, O., an experienced brick manufacturer, will become manager of the Summitville (Ohio) Brick Co.'s new plant, which will begin operations in the near future. The new plant will have a capacity of 45,000 paving block or 65,000 face brick per day.

The property of the old Mulholland Bros. Brick Co. at Marion, O., was sold recently at sheriff's sale to Lenox Reber for \$1,500. The property was appraised at \$7,900.

The Dover (Ohio) Fire Brick Co. recently purchased 86 acres of clay land at Strasburg, O., where it is reported the plant will be located.

The Arcola (Sask.) brick yard has turned out a million and a half of brick so far this season and expect to reach the full output of two and a half million before the season closes. They report a good demand for brick this season.

At Sault Ste. Marie, the Algoma Brick & Tile Co. has been incorporated with a capital of \$40,000.

The American Sewer Pipe Co., of Grand Ledge, Mich., has resumed active operations at its extensive plant recently, after a shut down of nearly two months for repairs and improvements. This industry is one of the largest in Eaton County.

Secretary E. R. Merrill of the Citizens Club of Chehalis, Wash., has received some fine specimens of brick that were made from local clays shipped to Ohio for testing. It is thought possible that the Chehalis Brick & Tile Co. will be reorganized and work resumed at the plant.

The Alhambra (Ariz.) Brick & Tile Co. has recently secured the contract for 250,000 feet of vitrified pipe, ranging in size from eight to sixteen inches and about 150,000 ft. of smaller pipe, to be used by the American Light & Water Co. at Phoenix, Ariz.

OUR EASTERN LETTER.

New York, Sept. 26.—With a weekly consumption, averaging 10,000,000 common brick, prices here are scheduled to advance twenty-five cents a thousand each week until a uniform level of \$7.00 is reached. The first advance in this arrangement was scheduled to take place on Saturday, September 23, which will put the current quotation for common hards from the Hudson river district at \$6.00 to \$6.50. Raritans are trailing along twenty-five cents a thousand below these figures and what little Hackensack brick is coming into this market now is selling at \$5.50 to \$6.00. Other clay products are in a stable market, but with a spasmodic demand.

On top of the announcement that the price of common brick will move up within the next fortnight, it was decided to have all the companies operating plants along the Hudson river from Haverstraw to Kingston, under the control of the Greater New York Brick Co. close down for the year, on September 23. This is about six weeks earlier than usual. These two important developments in the trade have caused general consternation among consumers of brick and particularly among dealers in the Metropolitan district. Your correspondent has learned that there is a spirit of revolt among some dealers who threaten to take retaliatory measures to protect themselves from what they believe to be an arbitrary inflation of brick prices for no other reason than to placate certain manufacturers in the new combination who have been complaining that the Greater New York Brick Co. has not made good on its promise to return them larger profits on their product through regulation of shipments and purchase of supplies.

Francis N. Howland, one of the largest dealers in this city and prominent in the affairs of the Building Material Exchange, made this statement:

"I have almost come to the conclusion, with many of my fellow dealers, that the Greater New York Brick Co. was organized for the purpose of insuring larger profits

to manufacturers. At any rate, it seems to me that it would have been the part of wisdom or, at least good business, to have listened to the advice of those of us who argued against a further increase of price on common brick at this time. The tremendous use of cement, second hand brick and concrete block just now gives every evidence that the manufacturers are now charging all that the trade can bear and that it is not the part of wisdom to put the price any higher under existing conditions, at least."

In reply to this, an officer of the Greater New York Brick Company, made the following comments:

"We over-estimated the capacity of the Metropolitan district, when we organized last summer. The consumption has not been what it should be and in consequence the manufacturers have not been able to make any money. Are we manufacturers expected to keep on making brick at a loss? Are we not to be allowed to get more than twenty-five cents a thousand on our product? Unless we can make the brick industry pay larger returns than that we might as well stop manufacturing. The dealers of New York have been so long in control of the brick situation that they cannot come to the point of thinking that the manufacturers have some rights to a profit as well as the dealers. Brick should bring a better price than it does; there is no reason why it should continue to be so low. It was all right when there was a tremendous supply, but there is no large supply on hand now and, if the law of supply and demand still obtains in business, then our action is justifiable."

Following a recent meeting of the manufacturers identified with the new selling company at Newburgh, this statement was made just prior to the informal announcement that the prices would be advanced and that manufacturing would cease in the latter part of October, instead of in November:

"Reports at our meeting showed that there is now enough brick in New York to supply the demand for the next month or two. When the association was first organized it was anticipated that fully 800,000,000 brick could be disposed of this year. The estimates showed that there was a surplus of 400,000,000 left over from last year. The reports of sales, presented by President Rose, showed that all the brick shipped to the New York market, up to August 14, were sold on or before that date. That was due largely to the announcement that after August 14, the price of brick would be increased 25 cents on the thousand. The result was that the dealers, to get ahead of the raise in price, bought more brick than they really needed or had any prospects of needing. As a result the New York market became choked up and there is now (Sept. 8) scarcely any demand for the product.

"The estimates show that there are now 650,000,000 brick in the various yards along the Hudson. In addition to this there are 35,000,000 brick enroute to New York and 35,000,000 on the barges in New York which have not yet been sold.

"Ordinarily between 60 and 70 barge loads of brick are sold each week. During the last three weeks, that is, since the increase in price became effective, only sixty barges have been sold altogether, or one-third of the amount that was disposed of during a similar period in the past. A barge load of brick consists of from 325,000 to 350,000 brick, according to the size of the craft.

"With about 700,000,000 brick on hand and the demand not up to the standard, it is evident that something must be done. This season has been one of the poorest in years and the sales have been 60 per cent. of what they should have been. The price of brick can hardly be held responsible for the small sales, as the price is not so high as it was in 1906 or 1907. The market price now is between \$5.75 and \$6.25 a thousand.

"Besides the extensive use of concrete as a building material, another thing which has tended to injure the brick industry is the fact that the dealers in New York, through some misunderstanding gained a mistaken impression as to the object of the Greater New York Brick Manufacturers' Association. They assumed that we organized with a view of raising the price of brick. But that was not the case. We formed an association to regulate the brick market so that our product could be sold at a fair margin of profit, and every dealer would have an equal opportunity to dispose of his product at a uniform price.

"Conditions have now reached a point where we must decide to regulate the amount of brick manufactured. Otherwise we will have such a surplus on hand that the price will drop to about \$4.50 a thousand. Meetings will be held by the manufacturers next week to decide whether to continue the manufacture of brick or close the yards. Reports of the outcome of each district meeting will be made to the Association and the consensus of opinion of the manufacturers will guide the Association in its action."

Brick Makers Decide to Shut Down Early.

The result of this meeting was a determination on the part of the manufacturers to shut down their yards six weeks earlier than usual. As Thanksgiving day generally marks the end of the brick making season, that would bring the close of the 1911 season on or about September 23. Another important matter taken up for discussion was in relation to what the manufacturers term discrimination against them by the longshoremens and brick handlers in New York. This was given as one excuse for shutting down early. Another excuse was labor trouble on the yards and the tendency of workmen to quit the brick making plants for the early jobs on the aqueduct construction work, which is a permanent winter berth. These, coupled with the low price they were getting for their products in New York prompted an early closing decision.

In reference to the longshoremens' attitude toward the brick barges, there was some talk of taking over the brick barges and handling the transportation problem themselves. As a matter of fact this has all along been considered as a logical move on the part of the Association if it was sincere in its efforts to insure larger profits to manufacturers by cutting down costs and not merely to keep up the price of brick.

According to reliable estimates, there will be not more than 50,000,000 brick in reserve, in the Hudson river district, if the manufacturers carry out their plan to shut down on October 24. There is now (Sept. 21) 125,000,000 brick held by dealers in New York, of which 93,900,000 was accumulated in the week between September 18 and 23, probably the largest week of sales ever recorded for a fall season. It is probable that the sales for the current week will reach very near that figure, so that the estimate of 150,000,000 brick held on speculation in this city at the present time is very conservative.

This shows how inflated conditions are here at the present time. The actual weekly consumption of new common brick is probably not more than 8,000,000 at this writing, but there is more second hand brick demanded by builders than the wreckers in this city and Newark can supply. The second hand brick dealers are getting \$3.50 to \$4.00 a thousand for cleaned brick, a price never before obtained for this material. Even bats are being sold, where the building law will permit them to be used, and for the first time in years a price is being quoted on them at \$1.50 to \$2.00 a thousand at yard.

It is small wonder that the dealers are worried. Some of the oldest men in the business could not remember when dealers were compelled to stack so heavily at this time of the year, and unless conditions improve their stacks will still be on their hands on January first. There are dealers who have made arrangements for holding brick for spring speculation, upon the belief that the manufacturers have underestimated New York's winter capacity and here the dealers scent more trouble.

Is Ten Dollar Brick the Goal?

It is fresh within the memory of Eastern manufacturers when "Brick was King." The day of \$10 and even \$11 brick is only a matter of eight years ago. It was precipitated by a series of circumstances not unlike those now shaping. The question: "Is \$10 brick the goal of the New York Brick Association?" therefore arises naturally. Those in the secret councils of the Association deny it, but the query will not down. Some dealers are planning to take a chance anyway.

The facts are that the manufacturers will not carry more than 35 per cent of last year's reserve through the winter, and the fixed winter price will be \$7.00 or more. After October first, when the steel schedule goes back to normal prices and the other building material markets reach a settled level, there should be a resumption of active building operations. The construction of the world's largest business building on the square block now occu-

pied by the Madison Square garden, the erection of the successor to this great arena, which will occupy a square block between 47th and 48th Street from Park to Lexington avenues by the New York Central Railroad Co., the construction of the barge and freight terminals, planned by the city and state in New York Harbor, the vast extensions planned at the Bush terminals not to mention big hotel projects laid out for Manhattan during the winter, all call for tremendous quantities of common brick. These facts are well known by the directors of the Greater New York Brick Association. The dealers themselves, know about these contemplated improvements and that may account for their willingness to stack now. With a limited supply of brick prior to the arrival of new 1912 material, it would not be unreasonable to expect, \$10.00 brick with such a demand as would be created by so many big operations.

Unable to supply from their Sag Harbor yards sufficient brick to meet the demands of builders in that locality, the Long Island and Fisher's Island Brick Co. has in the past month shipped from Fisher's Island to Sag Harbor by schooner upwards of one million fine quality brick.

OUR BUCKEYE LETTER.

Columbus, O., Sept. 25.—Building brick manufacturers, paving brick and block people and sewer pipe manufacturers in all parts of Ohio have been enjoying a very good business during the last four months. All in all, the summer season was one that at times created no small amount of interest in future business. Frequently mails were heavy, and then there would be a lull for a day or so, then more business would be received. Orders have not been steady, but rather of the spasmodic order. These orders, when totaled, show that the manufacturers have been offered just about as much business as they were given in previous years.

The large amount of municipal improvement work done in Ohio this season proved to be a good thing for manufacturers, not only in Ohio but in West Virginia as well. The paving brick and paving block industry has enjoyed one of its best seasons.

Building has been fairly active in Ohio this summer, but the brick manufacturers could have handled more business, and at the same time felt at ease. However, the trade has been found to be in a very healthy state, when one takes general business conditions into consideration.

Announcement has just been made that the Hocking Valley Clay Products Co., of Columbus, of which Daniel T. Reagan is general manager, has completed during the last few days one of the largest oil land deals noted in the Buckeye State for many years. The Hocking Company owns thousands of acres of land in Hocking and Athens counties, which is known to be rich in oil. The Chartiers Oil Co., of Pittsburgh, Pa., has bought a lease on all the acreage of the Hocking interests for \$200,000 cash as a bonus, and in addition to this the largest brick manufacturing company in Ohio will also receive a one-eighth royalty on all oil pumped from the new field, which is in the vicinity of Straitsville. This deal shows that Mr. Reagan is surely working for the best interests of the Hocking Company, and since he has removed his family to Columbus feels like a regular hustling Buckeye State lad.

Concerning the business of the Hocking Company Mr. Reagan has said: "The reorganized company is making remarkable progress, and shipments from the plant have started in real earnest. Much of the brick recently shipped was for construction on large radial chimneys which are going up rapidly in the East. The demand for this class of brick is growing rapidly. The plant is being steadily improved and capacity being increased from time to time."

With a capital stock of \$30,000, the Mansfield (O.) Clay Products Co. has been formed by A. H. Wehinger and his associates.

Roy Tipton, who has been employed as chief office manager for the American Sewer Pipe Co. at the Lisbon, O., plant, has been transferred from Lisbon to the company's offices at New Brighton, Pa. He will remove his family to New Brighton.

J. E. Blackburn against John B. Owens and L. E. Dodd as receivers of the Zanesville Tile Co., was the title of a case recently filed in the Muskingum county courts.

wherein a certain sum of money is being sought. The case will be heard in Common Pleas Court.

The Cincinnati Clay Products Co., through its managers, William H. Geis and R. O. Newcomb, is creating quite a boom in mission-effect brick in Cincinnati. Some large orders for these brick have been placed and it is the intent to hereafter make liberal use of the product for home construction in Cincinnati.

Ross Rue, of Alliance, O., will be the manager of the new paving brick plant which is to be erected at Summittville, O., on the Cleveland & Pittsburgh branch of the Pennsylvania Railroad. The new company will possess a capital stock of \$150,000 and will have a capacity of 45,000 pavers daily and 65,000 building brick. This will be the first manufacturing industry for Summittville.

With a loss of \$4,500, the plant of the Huntsville Tile Co. was damaged by fire recently. The plant was owned by John Crouse and was located two miles from Bellefontaine, O.

The plant of the Champion Fire Brick Co. at Wellsville, O., which is now in the hands of a receiver, will not be operated during the remainder of the year, it is reported. The former owner of the plant, Thomas A. Silver, Sr., has all his affairs in the United States Bankrupt Court, and he personally is very ill, both physically and at heart, at his home near Wellsville. The plant, however, is in excellent shape for operation, and the brick made there were achieving quite a reputation.

LOUISVILLE, THE GATEWAY CITY.

Louisville, Ky., September 22.—With the first half of September very nearly gone, the self-evident fact develops in the general run of brick business that the fall of 1911 will go down on the books as being by far the most successful trade season in fifteen years in the "Gateway City," and there is a good chance for this season to establish a record which has never before been touched in local building annals.

The reason for the entirely satisfactory situation, which prevails at present and promises to rule for a couple of months to come, in brick manufacturing circles, is undoubtedly the unprecedented building boom which has struck this city. In the immense amount of work, which is in course of construction or in blue-print embryo, brick work predominates to such an extent that the manufacturers are working with might and main to keep pace with immediate delivery demand, and to be well stocked for big orders which are coming. There is not a plant in the city which is not running full time and several of them have extra working hours tacked on to their normal schedules.

Building Inspector Robert J. Tilford, in his report for the fiscal year of 1910-11, shows that this term has surpassed all others in the history of the inspector's office in point of aggregate value of permits awarded. The total valuation of permits issued during 1910-11 from the City Hall was \$5,569,097, the high-water mark for Falls City builders. This record surpasses the previous one established in 1906-07, by more than \$150,000, proving conclusively that the fiscal period just closed was the biggest in local history. However, since the present term is scheduled to start off with a rush in permits, as the award for the \$1,000,000 City Hospital which will grace Floyd and Chestnut street is yet to be made and a 25-story skyscraper is rumored on good authority to be forthcoming, 1911-12 promises to be a banner year in every respect and some of the building experts say that if the boom continues with any of its former strength, this period will establish as fine a record as its predecessor.

Since the Louisville Brick Club disintegrated by mutual consent of officials and members, a short time ago, there has been nothing done in the way of re-organization of the body. Weather and natural conditions during August and the first part of September have been unfavorable to such action, for all brick men who could possibly do so have been enjoying vacations, so the interests are biding their time until cool pleasant weather rules. Everybody is in a good humor, because of booming business and the chances for a revival of the organization appear generally favorable.

On Labor Day, September 4, the chief pleasure event of the year's run with the Louisville Builders' Exchange

was enjoyed at Hike's Point, a rustic recreation spot not far from Louisville. The building hosts of the Gateway City gathered at the Point several hundred strong to participate in their annual picnic and outing. Descriptive terms pale when applied to the occasion. The premier attraction, naturally, was the big picnic spread, furnishing fried chicken, country-cooked vegetables, ice cream, pies, etc., ad libitum, but the gastronomic feature was run a close second for popularity by the big baseball game and other athletic contests which followed and proved that there are, heretofore undreamed-of, exponents of physical culture in the ranks of the Exchange.

It was reported to "Brick and Clay Record's" correspondent that the extensive manufacturing properties of the Hydraulic Brick Co. in Louisville are kept working full time in anticipation of an exceptionally good season. The Hydraulic stock now includes about 5,000,000 brick, 3,000,000 of which had been sold up to the first of the month, subject to immediate delivery, with undoubted prospects for the disposal of the rest of the stock in the very near future. The company is embarking upon one of the most prosperous fall seasons of its long career, with its new grade of face brick, containing 30 per cent shale and 70 per cent mud, making a tremendous "hit" in Bluegrass building circles.

Among the more important Hydraulic jobs booked during the past month and either being now delivered or prepared for the immediate future are the following: Moving picture theater, 500,000 brick; Kentucky Electric Co. addition, 250,000; The Louisville Herald Building, 200,000; Weissinger-Gaulbert apartment house, 350,000; Parkland School, 350,000; Roman Catholic Church, 350,000, and Hazelwood School, 250,000.

The East End Brick Co., according to Secretary Crane, is running full time with a large amount of orders, being now engaged on about a 750,000 delivery and having an equal amount of business in immediate prospect. Among the big East End jobs are the Sts. Mary and Elizabeth Hospital addition; the George Rogers Clark School, and a new church.

Carl Hillenbrand, vice-president of the East End Brick Co. has been enjoying a long trip through the Far West, touring Yellowstone Park, and is expected to return about the middle of September.

With both brick and tile stocks moving in record fashion, the Southern Brick & Tile Co. is extremely gratified over existing trade conditions. The Southern plant is running on an overtime schedule, for present deliveries are taking care of a normal 10-hour run and the brick men are desirous of stocking up for especial activity in the future. Among the attractive Southern prospects is the award for the brick work on the Watterson Hotel, a \$600,000 hostelry now in course of construction.

The Southern Brick & Tile Co. purchased a big ditching machine from the Buckeye Traction Ditcher Company of Findlay, Ohio, a short time ago and President T. Bishop, of the company, has been superintending a big tile job for his company with the new apparatus at Shelbyville, Ky. The Louisville yards of the company were improved by the installation of a new railroad switch of eight cars' capacity, which affords connection with the Kentucky & Indiana Bridge Co.'s lines and corresponding interchangeable switching facilities with all other railroads operating in or out of Louisville.

The Louisville Brick Co. is operating its plant to capacity limit with a fine amount of orders already booked and a bright outlook for the remainder of the fall. The Louisville Company recently secured a contract from the municipal authorities of the Gateway City to furnish all hard brick needed by the city for the ensuing year.

The Cannelton Sewer Pipe Co.'s Works, located at Cannelton, Ind., a short distance from Louisville, were forced to shut down for several days last month because of a wrecked power plant. However, repairs were effected in the plant and business has been resumed upon its former satisfactory scale.

The General Refractories Co. of New York City has been active during the past month in securing extensive brick manufacturing interests in eastern Kentucky and western Pennsylvania. A few days ago the New York concern purchased the works of W. H. Wynn & Co., West Decatur, Pa., and the big plant of the Olive Hill Fire Brick Com-

pany, at Olive Hill, Ky. The recent acquisitions give the General Refractories Co. a chain of holdings through the region in question which have a combined capacity of 300,000 brick, of various grades and varieties, per day. All General Refractory plants are now running full time, in anticipation of an unusually prosperous season.

The Kincaid Brick Co. at Searcy Station, near Richmond, Ky., was sold a few days ago to E. C. Holliday, of Winchester, and Thomas Little, of Perry County, Ky. The new owners intend to enlarge the Searcy plant considerably and will probably convert it into a factory for the exclusive making of paving brick and tile.

Alexander Brothers, at Cadiz, Ky., recently completed the installation of a new gasoline engine to operate the brick machine in their yards in that place and are now running full time with increased capacity.

We are advised that the contract to furnish brick for the Alabama School for the Deaf and for a large hotel at Jacksonville, Fla., were secured and furnished by W. G. Bush & Co. of Nashville, Tenn., instead of T. L. Herbert & Sons of that place, as previously stated.

IMPROVED CONDITIONS IN CHICAGO.

Chicago, Ill., Sept. 27.—The hoped for resumption has come at last, and the brick and clay operators and dealers here are happy. While somewhat late in arriving, every one seems to be contented with what appears to be a very active fall demand. Within the past two weeks there has been more actual evidence of an industrial movement than for some months. Unless all signs fail, the labor difficulties are at an end, for the present. The settlement of the difficulties between the steamfitters and plumbers, after much warfare, some deaths, and a loss of many thousands of dollars in building operations, has been arranged, and while some incline to think that it may still be an issue, it is generally conceded that the worst is over.

It has been a turbulent year in the building line. It has been a year marked by much agitation and great strife, which affected the entire building industry in a most serious manner. In this respect the clay men have come in for a considerable portion of the consequences. Not only did the trades unions' strike, but the brick makers themselves, and this has added its weight to the total.

With the adoption of the new height limit to buildings and the settlement of the troubles with the workers, there has been a revival that will make the increase in the number of permits, and the actual work done before the close of the year, a pleasing finish. While some of the large skyscrapers will not demand much in the way of materials for some months, there has been some considerable revival in the erection of manufacturing plants, apartments, residences, and much work that will actually bring up the amount of materials necessary to considerably greater proportions than was thought likely a month or so ago. This gratifying report has brightened prospects for the clay men considerably.

To show what actual progress has been made in the eight months of the present year, the figures of which are given herewith, make it a most gratifying one in a number of respects. Note the figures for the present and the past year, the latter of which was a noted twelve months in a structural way:

FIRST EIGHT MONTHS IN 1911.

	No. Permits.	Cost.
January	407	\$ 3,143,200
February	615	4,265,400
March	1,199	9,553,700
April	1,080	8,581,100
May	790	4,720,600
June	1,081	7,126,100
July	1,041	10,298,600
August	1,163	26,200,500

FOR THE CORRESPONDING PERIOD IN 1910.

	No. Permits.	Cost.
January	482	\$ 6,054,300
February	682	5,678,600
March	1,381	10,002,900
April	1,095	7,837,200
May	1,118	7,450,000
June	1,057	8,495,600
July	825	5,253,200
August	901	6,743,200

These figures include the late permits issued for a number of large buildings, but even then the showing is a most gratifying one, when all things are given due consideration and following so closely on the most remarkable year in the city's building development, it is evidence of a feeling of assurance in the business world.

Much of this work will demand various kinds of clay products and the total will be large, when all is footed up and the returns are all in. Chicago is a lover of burned clay, and there is no question but that the year will wind up with a great deal to its credit for the clay man.

There was a slight friction with the building brick manufacturers and the engineers a short time ago. This was settled without much ado. The supply of building brick now on hand is about, or nearly normal. The plants are operating in about the usual way, and the outlook for the fall is that there will be a continued active demand until the cold weather sets in for good. There has been some increase in the call for building brick in the past few weeks, and this is a good indication of the real status of the situation. Prices continue on the same basis as in the past.

The promoters of the Clay Products Exposition, to be held at the Coliseum next March, are boosting the show in a way that will be productive of the best possible results. When the show has passed into history, there will have been a great deal done to advertise the desirability of clay products in all forms.

The report from the office of the Illinois Brick Co. gives ample evidence of the fact that the fall promises well. The plants are well under way, and the demand for brick has been improving within a week or so. Sufficient business has been noted here to give the company confidence in the outcome of the year. The strikes being about over there has been a return to at least some of the old activity that was noted prior to that time.

The Bonner & Marshall Co. has found a material increase in business, within a few weeks, and has closed a number of contracts calling for face brick. Not during the summer was the outlook so favorable and the fall now promises continued prosperity. There has been something of the old activity and the indications offer a pleasing prospect for the future months this year.

Mr. Kimball, of the Meachem & Wright Co., finds the outlook for face and paving brick much more flattering. He sees at least fair fall business, and his reasons for this is the marked improvement in business during the last few weeks.

Mr. Chas. S. Reed, president of the Chicago Retort & Fire Brick Co., reports this to be, thus far, a most favorable year with his company. In the past few months there have been erected at their plant a new Rodgers drier, three new kilns, a machine shop and other improvements that were found absolutely essential to care for the increased demand. This company has been doing a most gratifying business in fire brick and other fire clay products, and the best evidence of the virtue of the product lies in the fact that the increase in the business has been steady.

Mr. Cornack, of the Wisconsin Lime & Cement Co., has more confidence in the future, in respect to face brick, than for some months. The settlement of the labor troubles has made the situation much more pleasing, and the outlook now is for a very fair fall demand. He says that while it is late to see any great rush of business there will be a much more pleasing close than was hoped for earlier in the year.

At the S. S. Kimbell Brick Co., Mr. Matz stated that the increase for face brick, in the past few weeks, had been most gratifying. He felt confident that there would be a good fall demand, and in spite of the lateness of the arrival of the good news, it would make up in part for the long siege of inactivity that the brick men had experienced this year.

The "Chicago Heights Star" states that E. H. Manbeck has resigned his position with the Inter-Ocean Steel Co. and will act as the secretary of a new building brick company, with offices in Chicago. It is reported that the company will build a plant near Camden, Ark., for manufacturing paving and building brick. It is said that a number of Chicago and New York men are among the promoters.

NEW ENGLAND NOTES.

Berlin, Conn., Sept. 23.—Prices on common brick continue unreasonably low throughout New England, with the exception of Maine, where the market has been affected by the recent large fires. The volume of building permits continues good, with a better average than ever before and a large percentage of these permits are for buildings which will require brick in their construction. An inventory of the stock on hand in the various yards at this time, which is the first month of fall, shows that there is less than usual on the yards, certainly not enough to warrant the prevailing prices. A normal demand during this fall and winter will cause most of this stock to disappear and brick will be scarce next spring.

From the remarks your correspondent has heard relative to a recent article discussing the brick situation, it would seem that the time was ripe for the manufacturers, especially in Southern New England, to unite in an effort to strengthen the price on common brick.

Men who are familiar with conditions which exist in the building trade, admit that a minimum price of \$6.00 per thousand would bring just as many orders as the low price of \$5.00 will, and frame construction would not increase on that account. The sooner the brickmaker realizes this fact together with the fact that each year he is using up valuable clay in an effort to make a large number of brick so that he may come out even at the end of the year, the quicker will there be an improvement in the conditions which exist today. It is an admitted fact that many brickmakers are finding it "hard sledding," owing to the fact that brick are often sold for cost and often less. New York, with a much bigger problem to solve, has organized for the benefit of all and it would seem as though the brickmakers in New England could solve the problem as well.

The King-MacDonald Brick Co., of Middletown, Conn., have voted to issue 160 shares of stock, par value \$25. These are additional shares to the present capital stock.

The yard of H. B. Phillips of Ellsworth, Maine, is running to full capacity and shipments are reported good. The most of the brick from this yard are shipped to Bangor.

Among the new corporations, noted during the past two weeks, is the Bridgeport Construction Co., of Bridgeport, Conn. This concern will engage in the building business, with main offices in that city.

Three of the Berlin, Conn., yards have shut down for the season. They are the Berlin Brick Co., Crown Brick Co., and the Kensington Brick Co.

Plans being figured in Bangor, Maine, include a five-story brick block, a new bank building and cold storage warehouse, both of the latter calling for brick.

A substantial addition has been made to the Hartford, Conn., branch of the Cudahy Packing Co. The building is constructed of red brick.

Charles E. Hubbard, formerly manager of the Farmington Street Railway Co., has acquired the sewer pipe and earthen ware business long conducted by Stanley B. Bosworth at Hartford, Conn., and already has his new establishment well in hand. The specialty manufactured will be standard Ohio sewer pipe and fittings in every size from 3-inch to the 24-inch. At the present time his yards and cellars are said to contain more of this piping and fitting than will be found in any similar establishment between New York and Boston.

Another department which is no small factor in the business is that of the stone and earthen ware. Flue lining, wall coping, chimney tops, drain tile and other products will also be manufactured.

The plant is well located and has excellent shipping facilities and ample land area to admit of further extension.

WEST VIRGINIA.

Wheeling, W. Va., Sept. 23.—Business in the clay products line in the Panhandle State during the last summer has been quite up to the standard, although it is generally admitted that more orders could be conveniently taken care of.

In the Hancock County district, all plants have been running on good time on municipal contract work, and

these orders will keep the plant in active operation for several months to come.

Stocks in the yards are not generous, so when the shipping season is over, the manufacturers will then devote considerable attention to the stocks in the yards. This, of course, will mean additional work for the plants.

Down at Huntington, considerable interest is being manifested in the formation of the Huntington Clay Products Co., which was formed by T. L. Millard, with a capital stock of \$100,000. The company means business, for it has already prepared to let contracts for a modern fire-proof paving brick plant, replete with the most modern machinery, and shipping facilities. The main offices of the company will be maintained in the Prichard Building, Huntington, and they will be in charge of Mr. Millard. A capacity of 100,000 brick per diem is contemplated.

According to report at North Mountain, W. Va., G. M. Raymond of Dayton, O., is interested in the erection of a new paving brick plant in that locality. Report is also current that the construction of this new plant has been awarded to the Clay Products Co., of Martinsburg, W. Va.

The Potomac Brick Co., is another new concern to be located at Piedmont, W. Va., which has a capital stock of \$50,000. W. S. Smallwood of Piedmont, and W. A. Patrick of Westernport, Md., are interested in this new enterprise.

Operations have been resumed at the plant of the Suburban Brick Co., at Moundsville, W. Va., which were suspended for a brief season to permit of repairs being completed.

THE TWIN CITIES AND THE NORTHWEST.

St. Paul, Minn., September 24.—It has been a number of years since the brick trade here as a whole has seen as slow a season in general as the present one. Yards generally have found business slow, and it has not taken them very long to make enough brick to provide for the present season as well as to accumulate enough for the demand for the fall and early spring. The result is that many yards in this part of the country have begun shutting down earlier than common. The time for shut-down generally is at hand, but a number of interior yards have been down for several weeks.

There has been a combination of causes which brought about this situation. Building has not been as active this season as usual, and the brick trade has suffered its full share from the result. The poor crop showing has, for the present, tended to depress business still further, and many manufacturers have taken the position that they could not expect much business and have ceased attempting to do much.

The dry season for the first half of the year has also cut sharply into the drain tile business, and there is much less tiling being done this year than common. Some farmers have taken the position that tiling has a bad effect in dry seasons, despite the fact that the general showing has been the reverse. Others simply refuse to consider tiling because of poor crops. Either position means limited business in drain tile, for the first time in the last six or more years.

There is reason to believe that the demand for brick will have a reaction this fall which will help it if the trade is alert enough to go after the business and not allow it to drift along the lines of least resistance and of the most encouragement. In this case these mean lumber and concrete. If the brick trade were active in presenting the advantages of brick for numerous uses about the farm, they would develop much business which goes to lumber and cement instead. Still more could be done for residence construction, by urging the use of brick. There will be a revival in building this fall, to some extent, and the materials which get the attention of the public are the ones which will be most used. Crops are not large, but when they are all in and marketed it will be found that they are sufficient to produce a fair average amount of money return, and that will start a reaction which will help in business. There will probably be less spent in luxuries and in speculative investments, but this will help to encourage the investment in permanent improvements.

The Duluth territory has been enjoying the luxury of a vigorous price war. It started through a difference of opinion as to the relative values which should rule on

wire-cut and sand-mold brick, and it ran into selling at less than cost. A number of million brick were sold at about \$4.00, before all concerned came to the conclusion that they were furnishing a spectacle for "the dear public," paying all the bills and getting nothing out of it. When this conclusion was reached, prices were restored to around \$6.00.

Building Inspector Houghton, of Minneapolis, has prepared an ordinance which will require the installation of sprinkler systems in all mercantile or factory buildings in the downtown district of Minneapolis, that are four stories or more. This will apply to all buildings in the fireproof district, and will be one more reason why owners will find it advisable to use fireproof construction.

Work is being pushed vigorously on the construction of the plant of the Barr Clay Product Co., between Wanamingo and Zumbrota, Minn. The plant is a large one, and is to be completed some time this fall. There are twenty-four kilns being constructed now, each with a capacity for 120,000 brick. The plant is to have two dry and two wet presses, aggregating a capacity of 200,000 a day, and the initial capacity is to be 120,000. The plant is expected to produce practically all varieties of burned clay products.

At the Minnesota State Fair the displays of building materials have increased each year. The Mason City Brick & Tile Co. of Mason City, Iowa, had a display of drain tile hollow block, including those for building silos, and other clay products. The Minnesota Farmers' Brick & Tile Co., Austin, Minn., also had a showing of clay blocks for making silos. The Plymouth Clay Products Co., Fort Dodge, Iowa, had an extensive exhibit, covering its different lines of goods. The Twin City Brick Co. showed specimens of its numerous wares, including their well-known interlocking facing block, which is gaining such popularity. A number of other clay concerns had creditable showings.

M. C. Madsen, the proprietor of the Hutchinson Brick & Tile Works, at Hutchinson, Minn., afforded a very effective showing at the county fair. It will be samples of grain which was grown on land, reclaimed from a former peat bog and slough, by the use of clay drain tile. This land was absolutely useless until it was drained. After draining, the rich land produced abundantly. Mr. Madsen has done a great deal of tiling work.

The A. O. Ochs brick plant at Springfield, Minn., has sold twenty-five clay tile silos this season. This firm is an enterprising one and is always developing business through intelligent activity.

It looks as though the plant of the Fairmont Drain Tile & Brick Co., at Fairmont, Minn., might yet be operated on a profitable basis. Extensive investigations are being made in the vicinity of Fairmont for a satisfactory clay which is free from the defects which make the clay at the plant unavailable. Several beds in the vicinity have been found and tests of them will be made in the plant, before any decision is reached. It is probable that the plant will be operated with clay from one of these beds, as the indications are that the newly found clays have no limestone, such as makes the clay at the plant unsatisfactory.

Among the buildings erected this season, there is an encouraging number which are of hard burned brick exterior walls. The rough face showing a texture of strength and attractiveness to be seen in a number of the season's new style of brick.

The season's totals in paving work for Minneapolis shows that brick paving did not receive very much share in the work again this year. The amount invested in brick was slightly over the early estimate of \$30,000, but was only about five per cent of the total for the year, something over \$600,000. Creosoted wood blocks are still all the rage in the Flour City, while sandstone block are depended upon for heavy traffic streets, such as those approaching freight depots. This situation must be remedied and brick must be given a better share of the business.

The manual training authorities of the Minneapolis public schools stand ready to institute a class in brick-laying at the South High School, whenever there are enough students desiring such training to make the move desirable. It would seem as though the opportunity could

be improved by various contractors and brick manufacturers selecting some promising boys who wanted such training and starting them upon the course.

'ROUND ABOUT PITTSBURGH.

Pittsburgh, Pa., Sept. 28.—Now that the summer season is nearing an end, prospects for extensive building throughout the winter are not exceedingly bright. It appears, however, that the brick agencies and manufacturers in the Pittsburgh district are getting their share of the business "in the air." The demand for a white face brick in this locality is growing, and it is admitted that the supply is limited, when the fact is taken into consideration that only a small number of plants are engaged in producing these brick. A certain clay is required for the white face brick, which is not found in every section of the country.

The "mission" brick have had fairly good sales in Western Pennsylvania, during the last season, in fact more so than in previous years. The agencies here admit that they were in a position to have taken care of more business than has appeared on their books, without crowding the capacity of the plants, but that it was not to be had.

There is still a certain amount of unrest prevailing throughout the country, and just as soon as this is done away with, one may look for a very decided building boom.

Tile business is also having an upward look during the last few weeks, and some fairly good contracts have been placed. The Ludowici-Celadon Co., of this city, through its representative, L. D. Zellner, has closed the contracts for all the tile work that will be done on the new passenger stations on the Buffalo, Rochester & Pittsburgh railroad at Orchard Park and Mumfords, N. Y.

At Fallston, Pa., the Pennsylvania Clay Co. has completed improving its property, which is now being worked daily.

George W. Foster has completed the formation of the Youngsville, (Pa.) Brick & Tile Co., with a capital stock of \$60,000. Associated with him are Charles E. Foster, of Bradford, Pa., and Orren C. Allen, of Warren, Pa.

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CHICAGO, OCTOBER 15, 1911

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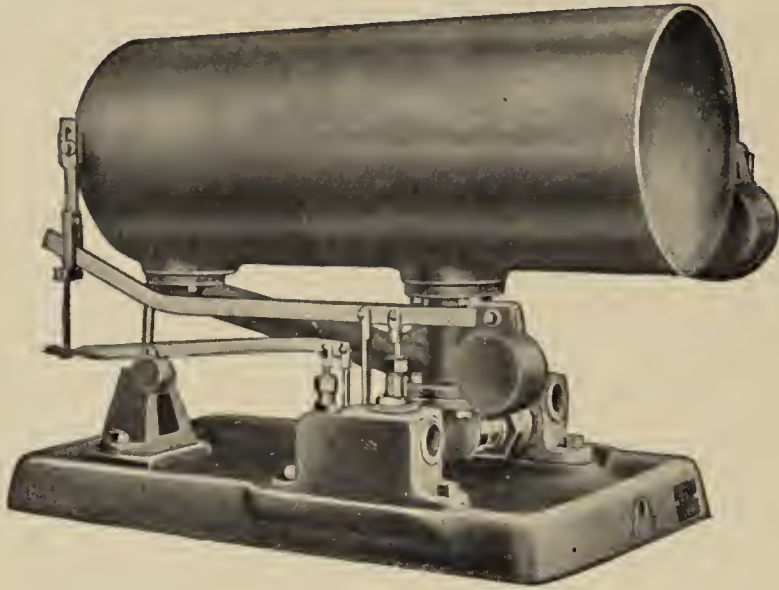
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Table of Contents

Page	Page
The Edward Morris Residence....Frontispiece	Editorial Comment 298
Home of Teco Pottery.....283-284	For Our Architect Friends—Interesting Semi-Annual Meeting 299
More Concrete Fatalities..... 284	The Justice Clay Crusher..... 300
Merits of Terra Cotta..... 285	The Superintendent—Contracts Let to Lowest and Best Bidders—The Burning Question .....301-302
New System of Chimney Construction.... 286	Drain Tile and Drainage—Cement Tile Plant Put Out of Business—How to Tile Land .....303-304
Some Clay Show Plans.....287-289	Paving Brick—To Further Good Roads— Encouraging Signs of the Times..... 305
Austin Disaster 290	A Wagon that Wears..... 306
Black Hawk Brick..... 291	The Dry Press for Making Fire Brick..307-308
Another Live One..... 291	Cement vs. Vitrified Clay Pipe..... 309
Up-to-the-Minute Advertising 292	General Pottery News..... 310
Clay Saves Twenty-Five Thousand Dol- lars .....293-294	Sand Lime Department—New Hydrating System 311
Enameled Brick, by E. Hardy.....295-296	Trade Review—Interesting Times in the East—Live Seattle News—Our Buckeye Letter, Etc.312-320
New Type of Oil Engine..... 297	

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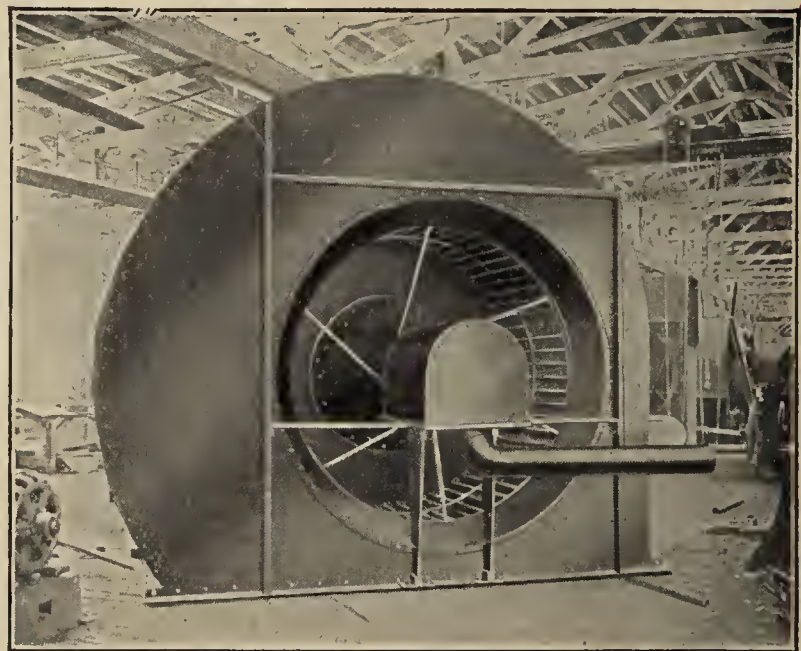
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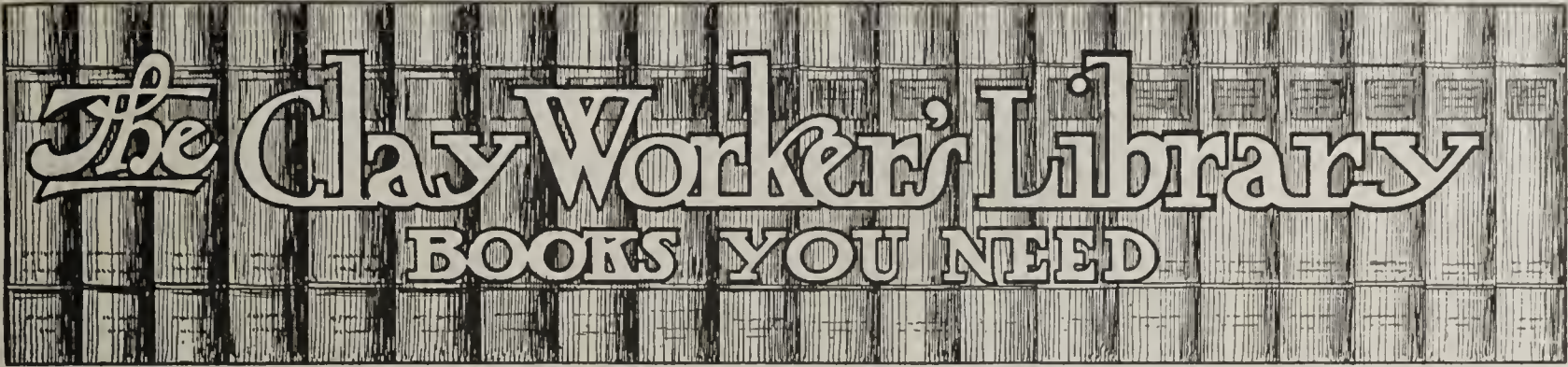
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VOL. XXXIX—No. 8

BRICK

AND CLAY RECORD



OCTOBER 15, 1911

HOME OF TECO POTTERY

Labratory Experiments, Enthusiasm and Loving Patient Care Result in the Production of a Type of Pottery Which Has Become the Popular Favorite of the Hour.

The Teco Pottery is the outgrowth of the American Terra Cotta & Ceramic Co. and might be said to be its child. Nearly thirty years ago this works was established by William D. Gates and the station of Terra Cotta was established 45 miles northwest of Chicago, on the Chicago & Northwestern Railway. The location is very picturesque, nature having done much for it. The site of the factory is beside a little lake, where at an early day there had been a saw mill, later on succeeded by a grist mill.

The water from the waste-way had washed away the soil and disclosed a bank of clay that first attracted atten-

Within the past year, a number of other tests have been added, giving a wider range and affording patrons an opportunity to use some of the Teco shapes in other colors.

One great cause for the popularity of Teco pottery has been the excellent shapes of the vases made, and that they have been left to excellence in shape and plain matt glaze effects and not overwrought. Mr. Gates' personal friends among architects and artists have contributed largely in designing these shapes, making them as the result of their friendship and their enthusiasm for the ware. Mr. Gates has long contended that to have a ware that will give pleasure, and continue so to do, it must



View of extensive plant of the American Terra Cotta Co. at Terra Cotta, Ill.—where they make Teco pottery.

tion and led to further research and further finds of other clays. After long experimentation upon mixtures of these clays, the Terra Cotta Works was started, on a small scale, and has been growing ever since, and now 250 men are employed at the factory. The product of this plant is now well known and is used extensively throughout the United States and Canada. The most recent large orders filled, were for the new Northwestern Terminal Station, and for the large group of buildings at the Great Lakes Naval Training Station.

This company has for many years conducted a laboratory, under the direction of skilled men, in which thousands of experiments are made in colors, bodies and glazes. The working out of one of these experiments has been productive of and resulted in the manufacture of the "Teco Pottery," a dull surface, matt glaze, in a peculiar restful green shade.

have this enthusiasm wrought into it when it is made, and must be a labor of love, and not the result of a drudging, laborious, made-to-order task.

The clay is brought by rail to the plant from Brazil, Ind. Two well-known mules, named Theodore Roosevelt and W. J. Bryan, respectively, pull the trams to the grinders, from whence the clay goes to the screen and to the mixers, by gravity to the molding room, from there to the dryers, then to the kilns, and last to the shipping department. The nine-foot dry pan is of the Frost Co.'s make, while the mixer has a forty-horsepower capacity. There are thirteen down draft kilns which are in continual use, crude oil being the fuel used.

Power is furnished by two Hamilton Corliss engines, one of 100 h. p. and the other 300 h. p., which generate an electrical power of 180 h. p. and steam power of 225 h. p.

The office, the country residence, located on the hill

just above the plant, and the entire surroundings, are of an artistic character, which lends inspiration to the workers. The vine-covered office is at present being decorated with interesting tile pictures of the plant's early history.

The downtown offices of the company are in the new

ous Ceramic Departments of our State Universities, with the brotherly co-operation exhibited by the members of the American Ceramic Society and with the Yankee ingenuity and American energy and "horse sense" that go with modern life, advancement will be made in ceramic art, in this country, beyond our wildest dreams and expectations.

MORE CONCRETE FATALITIES.

Reports of concrete failures are coming in thick and fast. From all parts of the country interested parties are mailing us newspaper clippings of these appalling disasters, the only wonder is that people still continue to use this insidious and deceptive material, which we will admit is "quite fair to look upon." But, as houses are made to live in, it behooves the builder to select a material which will stand up, at least until the building is completed, when it may be sold to some innocent and unsuspecting party, who is in luck if he doesn't "wake up dead" some fine morning.

Among the failures, recently reported, are the following:

At Nice, France, eleven persons are dead and sixteen others are suffering from severe injuries, as the result of the sudden collapse of a concrete restaurant building, which was being built. The collapse occurred while the work was in progress and came so suddenly that no one in the building had time to escape. It is alleged that the reinforced work was being hurried, on account of the heavy daily fine which the contractor was liable for, on account of exceeding the time limit.

At St. Louis, Mo., Edward Gillerstrom was seriously injured in a plunge of forty feet and several other workmen had miraculous escapes, when forty tons of fresh-laid concrete, composing a section of the roof over the Oliver Theater building, which was under construction, suddenly collapsed and fell to the ground with a crash.

At Manitoba, near the town of St. Boniface, a reinforced concrete bridge, which was completed, only last March, collapsed recently. The first concrete bridge at this point was erected in 1909, which proved to be a failure in less than a year, but nothing daunted, the authorities built



Terra Cotta Detail of Owatonna, Minn., Bank Building, made by American Terra Co., Terra Cotta, Ill.

Peoples' Gas Building, and there can be found many beautiful specimens of the celebrated Teco pottery.

This industry may be said to be the result of and typify the life work of Mr. Gates and his able co-workers for the past thirty years. If they have accomplished so much with the facilities they have had, no one can predict the future growth of this flourishing industry. Mr. Gates' four sons have been "brought up" in the business and are thoroughly conversant with the practical details and skilled in the teachings of the technical schools, are stepping into his place in the organization he has built up, and will be in position to work wonders in the clay products of the future.

Friends of Mr. Gates, whose names are legion, recognize him as a man of unusual acquirements, for aside from his business ability he is a poet at heart, and takes his recreation by writing prose poems which are decorated with quaint, humorous quips that lend a peculiar charm and attractiveness to his writings.

Mr. Gates is enthusiastic as to the future of the clay industries of America and maintains that with the numer-



Ornamental terra cotta, made by American Terra Cotta Co., used in construction of Plymouth Building, Minneapolis.

another, along similar lines, with the result that small cracks began to appear very soon after the bridge was completed, and a few days later the wing-wall fell, having sheared off at a point where it was about nine feet thick.

Three men were caught in the wreck of a seven-story

concrete building which the American Manufacturing Co. was erecting in Brooklyn, N. Y.

At Jamestown, N. Y., the new concrete boat-landing bridge, constructed some time during the summer, was found to have a large crevice in the span directly over the river.

Still another fatal accident was caused by the collapse of a concrete retaining wall Sept. 10th, which was being constructed at Cincinnati, Ohio, resulting in the death of two of the workmen and the serious injury of several others. It was claimed the supports had been removed too soon.

One man was killed and another fatally injured on Sept. 8th, by the collapse of the concrete Fairbanks building, which was under construction, at Winnipeg, Can.

combined in any other constructive substance, together with its cleanness, make it an ideal material.

It is surprising that it is not more used, as it is a cheap material, and can be obtained at a low cost, in all kinds of fancy shapes and designs, where special molds do not have to be made. If an architect specifies it in any of the stock shapes, it can be easily made from the molds already in the hands of the manufacturer. It is not usually kept in large quantities in stock, and if an order comes requiring special shapes, molds have to be made, and photographs of the product sent to the architect. If approved the terra cotta is made, and the cost is much greater than that of stock molds.

Terra cotta can be made in any color and texture, and in burning, the color is incorporated with the vitrified



Artistic Surroundings lend Inspiration to Pottery Workers at the American Terra Cotta Works.

The span of the fourth floor gave way, without warning carrying the men down with it.

The local paper in telling of the accident, aptly described the structure, as "a building of cement, of the poured type, a style of construction which is becoming common of late and has justly earned the name of 'mushroom building' on account of its quick growth," and we might add because of its unstable and perishable qualities.

MERITS OF TERRA COTTA.

There is no other material that has the qualities for ornamentation that are possessed by terra cotta as it can be easily molded in any desired shape, and retains its color, and in durability it is without a peer in the entire line of structural materials. Samples of it are found in ruins of buildings thousands of years old, and are as perfect as when they were placed in the walls. In modern times its immunity from the effects of fire have been demonstrated many times. In the great Baltimore fire a few years ago, it was found to be the best material for protecting the steel frames of buildings, which, when covered with any other material, warped and had to be taken down. Its lightness, combined with great compressive strength, two qualities rarely found

substance, so that it is as permanent as the body of the material itself. The Peoples Gas building in Chicago is built of granite to the top of the second story, and the rest of the way is terra cotta, colored to imitate granite. From the ground the terra cotta cannot be told from the granite. Since the erection of the Ford building in Detroit, which is eighteen stories high, with the entire front built of terra cotta, the use of that material for fronts has greatly increased in that city.

As an exponent of taste and expression there is no superior to it, and with the possibilities of cement as material for heavy construction, there will be small consumption of cut stone and structural steel in large buildings. Brick will always be useful, but as terra cotta is but another form of brick they may be classed together.

Deposits of fire clay in Butler county, Pa., will be developed by L. C. Wick, of Butler. It is likely that a new firebrick plant will be erected by Mr. Wick during the next few months, although final plans have not been determined upon.

Francis D. Halstead of Mt. Union, Pa., has been elected treasurer of the Mt. Union Refractories Co., a new concern just being formed there with \$300,000.

NEW SYSTEM OF CHIMNEY CONSTRUCTION.

The Wiederholdt Construction Co., of St. Louis, Mo., has perfected a system of chimney construction which they believe will revolutionize the chimney industry of the country. They claim that they are building a chimney which combines all the desirable and attractive features of the various types of chimney on the market and eliminates all their objections.

The Wiederholdt chimney is composed of an inner wall of special fire brick and an outer wall of special pressed face brick and an intermediate wall of reinforced concrete.

The inner and outer walls of brick entirely eliminate all temporary forms and framing. The inner wall of fire brick positively protects the concrete at every point from direct contact with the hot gases. The outer wall of pressed brick enables the company to build this chimney in accordance with any design or plan and furnishes a brick chimney of an attractive appearance, which it is generally agreed has never been improved upon.

The concrete part of the wall is confined permanently

furnaces, zinc smelters and fire brick kilns, etc.

A contract has been entered into between the Wiederholdt Construction Co. and the Alton Brick Co. of Alton, Ill., for the manufacture of the special radial brick required in the construction of this type of chimney. The brick manufactured at the Alton plant are of a very superior quality and their production is a substantial addition to the product of the plant.

This brick will be used in the construction of a large chimney for the International Harvester Co., Weber Works, Auburn Park, Chicago. Calculations show that this chimney is in every sense of the word a gravity chimney. That is to say, at no point is there any tension on the windward side of the chimney with a wind blowing at 100 miles per hour.

Notwithstanding this fact, this chimney is reinforced heavily with steel bars both vertically and horizontally, which are embedded in the concrete and which, though they have no functions in sustaining the chimney during a wind, are an additional factor of safety not provided in any other type of chimney and positively insure the chimney against cracking, due to temperature changes.

CHEERFUL PROSPECT.

It is likely that the little town of What Cheer, Ia., will have a clay enterprise of which it can well be proud. The Nelson Construction Co., of Mason City, has dissolved, and a new company has been formed, called the What Cheer Clay Product Co., capitalized for \$500,000. We have previously mentioned this new concern, but without these particulars. Dean G. F. Barsalou, for a number of years with Memorial University, is president of the company; W. D. Bardard, a Northwestern conductor, is treasurer; J. A. McMahon, a Northwestern engineer, is vice-president; and E. G. Nelson, of the Nelson Construction Co., is the secretary. It is stated that most of these officers will locate at What Cheer to look after the new venture. President Barsalou is considered one of the best geologists in the state.

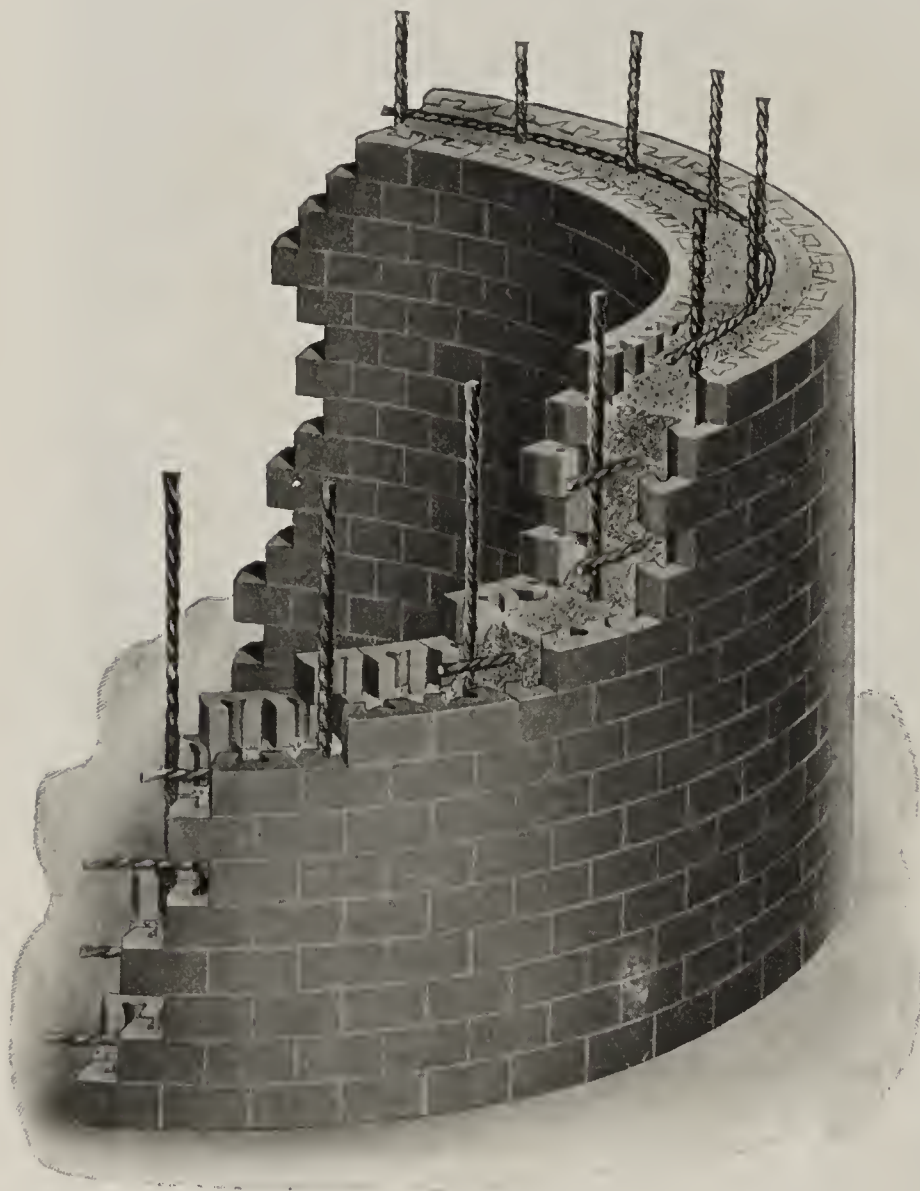
PLANT BURNED DOWN.

We are sorry to learn that the plant of the Platt Pressed & Fire Brick Co., at Van Meter, Ia., was burned down on the evening of September 28th.

This is to be regretted, especially as the company had been engaged in rebuilding the plant which had, however, extended only to the enclosing of the power plant in a brick structure. The balance of the plant was a large frame building of heavy mill construction which made a bad fire. The dryers were destroyed also so that the loss will exceed insurance by \$15,000 to \$20,000. The company had taken extra fire precautions in the frame building and felt secure. The plant had been in operation about ten days and all the lower drying space was filled so that quite a quantity of material in process of manufacture was ruined. The watchman did not discover the fire until the main building was in flames and before help could be secured, the plant was beyond rescue. The origin of the fire has not been discovered.

The management of the Clearfield Clay Working Co. of Clearfield, Pa., shipped a larger number of brick from their works last month than in any one month since they started in business, 22 years ago.

L. J. Dean has just closed a contract to act as associate architect with the Brown Engineering Co., of Pittsburgh, Pa., which concern has the contract for the erection of the Huntington (W. Va.) Clay Products plant.



View Showing Details of the Wiederholdt Construction Co.'s Method of Chimney Building.

and is never subjected to the removal of temporary forms which sometimes causes weak points, if not actual collapse of the structure.

By means of this construction it is possible to build a chimney of any thickness of wall without any change in the brick. This eliminates entirely the objection in appearance of a reinforced concrete chimney.

The construction is absolutely permanent and there can be no service in which it would not work successfully, as it is an amplification of the original type of reinforced tile chimney of which there are hundreds in successful service under the most severe conditions, such as glass

SOME CLAY SHOW PLANS

Plans for the great Clay Products Show, to be held at the Chicago Coliseum, next March, are rapidly developing. Some of the most important clay interests of the country have already signified their intention to be properly represented with exhibits which will be not only a credit to themselves but to the great clay industry. Already half of the space of the Coliseum floor has been reserved, and the displays already planned establish without question that the exposition will be one of nationwide importance. In fact, its scope is even greater than nation-wide and much interest is being felt abroad, in the coming American exhibition. The international idea will be manifested by representative exhibits from both Canada and Mexico, and it is believed there will be a considerable attendance from both of these countries.

The show management is giving its particular attention to making the Exposition of practical money value to the exhibitors, and immense sums will be expended for advertising to carry out this purpose. To make the show profitable to the brick, terra cotta and fireproofing man-

ufacturers, Upper Kittanning Brick Co., Olean Pressed Brick Co., Allegheny Valley Brick Co., Hocking Valley Fire Clay Co. and others. These manufacturers will vie with each other in exploiting the perfection and beauty of brick as a building material, and it is expected that their booths will be structures of great architectural merit.

A number of common brick manufacturers have reserved space to show, not only the important part which common brick plays in building construction, but also to show the possibilities which common brick possesses as a wall facing. The Illinois Brick Co. will have a very attractive display, as will also the Western Brick Co. of Danville, Ill., which operates the largest common brick plant in the country.

No exposition of clay building material would be complete without a substantial showing of roofing tile, and the greatest roofing tile company in the world will be properly represented at the Coliseum show. The Ludowici-Celadon Co., which operates five great plants, will



Latest creation in art pottery—electroliers and portables made of red New Jersey clay, glazed by new process. Exhibits of this type will make attractive features at the clay show.

ufacturers, the exposition will be made of such particular interest to architects and builders that there will be a large attendance of these throughout the country. To make the exhibits of sewer pipe and paving brick manufacturers profitable, plans are being made to bring to Chicago, during the show, a large number of municipal engineers and other city authorities. These direct benefits are outside of the general publicity benefits which will be obtained, by the members, through the vast attendance of the public throughout the Middle West and that resulting from the large amount of newspaper and magazine publicity which will be given to the features of the show.

Already a considerable number of the leading face brick manufacturers have taken space. Some thirty of these manufacturers, acting jointly, have reserved sixteen adjacent spaces on one of the main aisles and will present exhibit structures of the most attractive designs. Among other leading face brick companies which have reserved special spaces and which are planning attractive exposition structures to show the merit and beauty of their products are the La Salle Pressed Brick Co., Davenport Brick & Tile Co., Twin City Brick Co., C. E. Postom, Hocking Valley Products Co., Kittanning Clay Products Co., Tuna Valley Pressed Brick Co., Pearl Clay

make an exhibit of all the beautiful varieties of roofing tile, showing same in its practical application.

Fire brick and refractories will not be behind the other forms of clay products at the coming show, and it is expected that several leading companies will make displays of great interest and value. The Chicago Retort & Fire Brick Co. will show in attractive manner their famous Ajax brick and other refractories, and the W. S. Dickey Clay Mfg. Co. of Kansas City has reserved space and will make an important exhibit of its various forms of refractories. It is believed that the general public will show a great interest in the refractories displays, and that a considerable number who are interested in the use of refractories will attend the show, and must be impressed by these exhibits. Chicago and adjacent towns represent the territory which uses an immense quantity of refractories, and a show of this kind attracts an attendance which includes many possible customers of the fire brick and refractory manufacturers.

Fireproofing, the great modern building material now used to such an extent in the construction not only of skyscrapers but of small buildings, including fireproof residences, will be shown in all its possibilities. Actual structures built from this material will vividly display in a most practical manner to the public the development

of this form of building material and the many uses for which it is now available. The National Fire Proofing Co. will be one of the big exhibitors. The Ohio Clay Co. will show the merits and advantages of the wonderful Denison interlocking tile, which has already proved a popular innovation in many localities and which promises great developments for the future. A novelty in building material will be the exhibit of the Van Wie pipe building tile.

The Davenport Brick & Tile Co. of Davenport, Ia., in their exhibit will display the merits of their brick, hollow block and agricultural drain tile.

One of the most important exhibits at the show will be the beautiful exposition structure of the American Terra Cotta Co., which will display the use of ornamental terra cotta and its application to modern architecture. Some special terra cotta pieces of great art value will be displayed by this company in their exhibit and, without doubt, this will be one of the most beautiful displays to be seen at the show.

It is expected that one of the strong features of the show will be the municipal section, in which will be displayed the products of the manufacturers of paving block, vitrified clay sewer pipe and clay conduit. It is hoped that a full-size brick paved street will be one of the star features of this exhibit, and it is planned to conduct certain tests and to make certain exhibits which will attract the general attention of municipal authorities and secure their attendance at the show.

The National Paving Brick Manufacturers' Association is co-operating with the show management to the fullest extent, and will have an important exhibit, representing a large number of paving brick manufacturers who are members of the Association. Among other special exhibitors in this branch of the industry will be the Purington Paving Brick Co., the largest producers of paving brick in the world. It is expected that they will have a display of great beauty and interest.

The American Sewer Pipe Co., the largest producer of sewer pipe in the world, has booked liberal space at the show, and will make a strong exhibit. The Blackmer & Post Pipe Co. of St. Louis and the W. S. Dickey Clay Mfg. Co. of Kansas City, both immense producers of vitrified clay sewer pipe, have engaged space and will make important exhibits.

One of the most important branches of the clay industry is the manufacture of agricultural drain tile and the drain tile men will do their share toward boosting their products at the clay show. Mr. C. B. Platt, secretary of the Western Drain Tile Bureau, recently called at the office of the Exposition Company and made tentative plans for the representation of the drain tile interests. Several individual manufacturers of drain tile have signified their intention of doing their share toward the display for the purpose of seeing that drain tile was properly exploited and to take advantage of the great amount of publicity which will be given to clay products at this time. It is hoped that the U. S. Agricultural Department will co-operate in this drain tile feature of the show, to show the great value of tile drainage to the agricultural interests.

Although arrangements have not yet been completed, there is now under consideration, between the show management and the manufacturers of floor and wall tile, a plan to reserve an important section on the Coliseum floor to make an elaborate and beautiful exhibit of these burned clay materials.

A considerable number of other leading manufacturers

of various forms of clay products are now in communication with the secretary, Mr. F. L. Hopley, 815 Chamber of Commerce Bldg., Chicago, regarding the reservation of space for their exhibit, and we only mention in this article, to show the extent and variety of the displays, those that are already assured. It must be evident to all manufacturers of clay products, throughout the country, that now is the time to make their arrangements for representation, and it is a matter which cannot wait until the last moment, for the show management must make careful plans to secure special displays and such arrangement of the exhibits as will produce the most harmonious and satisfactory effect. It is desired to make the Coliseum floor so artistic and attractive as to excite the admiration of all who attend, and to produce the greatest possible publicity and favorable impression in favor of burned clay.

We can only repeat again the now familiar slogan, "This is your show, gentlemen." The clay manufacturer who refuses to give such a movement his hearty support, at least to such extent as he is able, is failing to do his duty toward the industry of which he is a part. The show is run entirely for the purpose of boosting clay products. The men who put their money into the enterprise have done so without any expectation of ever seeing it again, and they are entitled to the hearty support of every clay products manufacturer.

No clay man should feel that his contribution in the way of an exhibit would be too small to be worthy of a place in this show. The small exhibitors are just as welcome as the big ones, and every brick shown will add to the strength and importance of the whole.

CHAMBERS BROS. CO.

At a recent meeting of the directors of Chambers Bros. Co., at Philadelphia, Pa., Mr. J. Howard Chambers was elected president to succeed Cyrus Chambers, Jr., deceased.

Owing to the infirmities of the late Mr. Chambers, Mr. J. Howard Chambers has been acting president for several years, and his election as president makes no change in the organization of the company. The personnel of the company and its capital remains the same as heretofore.

FLOURISHING WYOMING PLANT.

We have been advised that the Sheridan (Wyo.) Press Brick & Tile Co. are contemplating making extensive improvements to their plant. Mr. Carl F. Kneisel, the secretary and treasurer, gives the following cheerful news concerning their company:

"We are having the best business season ever experienced by the company since its incorporation. Up to the present date, we have sold 1,500,000 brick this season, with a good lot of orders ahead not delivered. However, we have been able to more than supply the demand. Our future orders on hand will bring our year's business up to more than 2,000,000, which we think is pretty good for a city of 8,000 population. Practically all the brick were used in buildings in our home town."

COMMENDABLE MOVEMENT.

The new state building code in the state of Ohio prohibits the housing of picture shows in any but fire-proof buildings. This is a move in the right direction, which, however, does not do away with the danger from the shows which were located in frame buildings before the code was put into effect.

"IS YOUR NAME WRITTEN HERE?"

Commendatory Letters Received by the Clay Products Exposition Co. Show the Hearty Co-operation Which Manufacturers, Dealers, Architects and Machinery Manufacturers are Extending to the Movement.

McKim, Mead & White, Architects,
New York.

A thoroughly representative show should be of much interest to architects, and judging from other shows should say the public generally would be attracted by such an exhibit.

James E. Ware & Son, Architects,
New York.

We believe such an exhibition would be very useful and instructive to people at large as well as to those directly interested in building and would without doubt receive the support of the public.

Hard & Short, Architects,
New York.

We heartily appreciate the proposed exhibition. It will prove not only interesting to architects and builders generally, but will be instructive to the general public who are not as familiar as they should be with such matters. This exhibition will be of great value to the exhibitors.

James & Leo, Architects,
New York.

We believe that this exhibit will be interesting both to the architects and builders as well as to the laymen. We trust you will be able to arrange such a show.

Chambers Brothers Co.,
Philadelphia, Pa.

We wish to thank you for the effort taken to care for us in the matter of space in the Clay Products Exposition. We appreciate it very much.

Builders Weekly Guide,
Baltimore, Md.

If we can be of any assistance to the Clay Products Exposition kindly advise us. With best wishes for success of your undertaking.

Brown Instrument Co.,
Philadelphia, Pa.

We will make a particularly desirable exhibit at the Clay Products Exposition and will do our best to make an interesting showing.

E. J. Brown,
Philadelphia, Pa.

I hope the Clay Products Exposition will be a great success.

Blackmer & Post Pipe Co.,
St. Louis, Mo.

We feel sure you will not be disappointed with the display we make at the Clay Products Exposition. It will be a splendid exhibit.

Architectural Review,
Boston, Mass.

The Clay Products Exposition has our complete sympathy. We wish you success.

American Hoist & Derrick Co.,
St. Paul, Minn.

Success to the Clay Products Show. We expect to exhibit and we want space for our representatives with printed matter and photographs.

Gleason Fire Brick Co.,
Gleason, Pa.

We wish you success in your undertaking.

Acme Brick Co.,
Marietta, O.

The Clay Products Exposition is a good thing and we wish it every success.

Beaver Clay Mfg. Co.,
New Galilee, Pa.

You may rest assured the exposition will have our support as is shown by our application blank.

Colonial Pressed Brick Co.,
Mogadore, O.

We heartily agree with you that it will be to our advantage to make an exhibit at the Clay Products Exposition. We wish you every success.

Akron Smoking Pipe Co.,
Mogadore, O.

We feel quite sure that the Clay Products Exposition will result in a great deal of good to the clay manufacturers.

Streator Paving Brick Co.,
Streator, Ill.

We intend to exhibit at the Clay Products Exposition.

Crawfordsville Shale Brick Co.,
Crawfordsville, Ind.

We believe the Clay Products Exposition is a step in the right direction and will proclaim to the world the value of clay products. You have our best wishes for the success of the exposition.

Columbus Brick & Terra Cotta Co.,
Columbus, O.

We expect to make a display at the exposition.

Alliance Clay Products Co.,
Alliance, O.

We will certainly be represented at the Clay Products Exposition.

Darlington Brick & Mining Co.,
Pittsburg, Pa.

We have arranged for space at the Clay Products Exposition.

Twin City Brick Co.,
St. Paul.

We are more than pleased to learn that the outlook of the Clay Products Exposition is bright. We will do our share to make it a success.

Bollivar Face Brick Co.,
Bolivar, Pa.

We are greatly interested in the Clay Products Show and expect to give it proper support.

D. O. Loy,
Atkinson, Ill.

I am anxious to do what I can to make the Clay Show a success.

Hibbard Brick Co.,
Kearney, Neb.

We think the Clay Products Exposition is all right and we trust you will meet great success.

W. E. Lyon & Co.,
Carthage, Ill.

We are only little fellows but we want to take part in the 'Exposition'.

The Tuttle Brick Co.,
Middletown, Conn.

We certainly are much interested in the Clay Products Exposition. You have our good wishes.

The Clearfield Clay Works,
Clearfield, Pa.

We are in hearty accord with the Clay Products Exposition and wish you every success in the world in the undertaking.

Ladd-Birchy Brick Co.,
Fort Payne, Ala.

We wish you grand success for the Clay Products Exposition.

Clinton Paving Brick Co.,
Clinton, Ind.

We expect to join with others in making the Clay Products Show a success. We are very much interested in the Clay Show.

Bradford Pressed Brick Co.,
Bradford, Pa.

Our company will support the Clay Products Exposition.

Clinton Paving Brick Co.,
Clinton, Ind.

We expect to join with others in making the Clay Products Show a success. We are very much interested in the show.

The Clay Craft Brick Co.,
Columbus, O.

We are very much interested in the Clay Products Exposition and want to make a creditable exhibit of our product.

Providential Tile Co.,
Trenton, N. J.

We think the Clay Products Exposition a good thing and wish you every success.

American Carpenter & Builder,
Chicago, Ill.

You can count on us for assistance in boosting the Clay Products Show. This exposition of clay products is just what the building trade needs and we wish it all success.

Woodland Clay Co.,
Woodland, Ill.

If for no other reason, our own selfish interest would compel hearty co-operation in the Clay Products Show.

Western Contractor,
Kansas City, Mo.

We assure you that the Western Contractor is at the service of the Clay Products Show. We wish you every success.

Western Brick Co.,
Danville, Ill.

We are for the Clay Products Exposition in every way.

Trautwein Dryer & Engineering Co.,
Chicago, Ill.

We assure you we will boost all we can for the Clay Products Exposition.

Thew Automatic Shovel Co.,
Lorain, O.

We will be pleased to do everything to boost the Clay Products Show.

Ohio Galvanizing & Mfg. Co.,
Niles, O.

We believe the Clay Products Exposition is in good hands and without question will be the greatest exhibit ever shown in this country. Advertise it good and strong.

Ohio Builders Supply Association,
Columbus, O.

We trust the Clay Products Exposition will be a complete success.

National Paving Brick Mfrs. Assn.,

The Clay Products Exposition prospectus is very creditable, inviting and artistic. We want to aid this enterprise in every way we can.

Illinois Supply & Construction Co.,
St. Louis, Mo.

We will be glad to talk up the exposition at all times.

Hocking Valley Fire Clay Co.,
Nelsonville, O.

We trust that the great effort you are putting forth for the Clay Products Exposition will be fruitful of very large results.

Pacific Builder & Engineer,
Seattle, Wash.

We feel that the Clay Products Exposition is in every way worthy of commendation. You have our best wishes.

Davenport Brick & Tile Co.,
Davenport, Ia.

Our exhibit will be something original and will interest brother clay men. We wish you the grandest success.

Currie & McLaren,
Philadelphia, Pa.

We will take every opportunity to boost the Clay Products Exposition. It has our best wishes for success.

Providential Tile Co.,
Trenton, N. J.

We think the Clay Products Exposition a good thing and wish you every success.

The Clay Croft Brick Co.,
Columbus, O.

We are very much interested in the Clay Products Exposition and want to make a creditable exhibit of our product.

Construction Record,
Pittsburg, Pa.

We will do our utmost to aid the Exposition in furthering the aim of the clay industry.

Columbus Clay Mfg. Co.,
Black Lick, O.

All good wishes for the success of the Clay Products Exposition.

Brick & Clay Record,
Chicago, Ill.

Nothing could be more beneficial to the Clay Industry than this exposition. The exhibitor will find thousands of buyers at the exposition and his exhibit should be such as will attract him and make the interested visitor a customer.

The Clay Worker,
Indianapolis, Ind.

The Clay Products Exposition will prove a mighty force in the uplift of all clay industries and the exhibitors will be benefited immensely.

Consolidated Tile & Brick Mfg. Co.,
Risingsun, O.

We certainly wish the Clay Products Exposition all possible success and will boost in every way possible. The clay workers should by all means give their best efforts to make this show a success. They will reap great benefits from it.

Carson Brick Co.,
Charlotte, N. C.

We hope the Clay Products Exposition will be a grand success. No doubt all connected with it will feel amply repaid for their efforts. We thank you for what you are doing for the business and know we will all be helped and should all put our shoulders to the wheel.

National Capital Products Co.,
Washington, D. C.

We wish the Clay Products Show every success. We think the clay industry should combine to do more along this line.

O. Geehee Brick Co.,
Union Point, Ga.

We thank you for your interest in the clay industry. The exposition has our best wishes.

Kittanning Clay Products Co.,
Bradford, Pa.

We expect to put on a creditable display at the Clay Products Exposition and will do our part towards making the show a complete success.

CONCRETE FAILURES.

By F. W. Fitzpatrick, Consulting Engineer, Wash, D. C.

"Look to your concrete dams!" seems a most timely warning. The awful Austin tragedy illustrates what can be the result of a dam failure, and the newspapers record day by day such items as the following which illustrate the imminent possibility of its recurrence:

La Crosse, Wls., Oct. 6.—Thousands of terrified inhabitants of Black River Valley are scrambling for safety tonight, fearing that the big \$2,000,000 dam of the La Crosse Power Company, at Hatfield, Wls., will be unable to withstand the strain of the billions of gallons of water pressing against the concrete structure.

Heavy rains for the past week have swollen all rivers and streams throughout the entire State. Dams at Chippewa Falls and Bloomer gave way this afternoon. A secondary dam of the La Crosse Power Company, the Dells Dam, situated some distance above the main dam, at Hatfield, also went out this afternoon, thus increasing the strain on the latter structure.

Reports of heavy loss of life are current here, but no confirmation can be obtained, because of the fact that all telegraph and telephone wires are down.

The best engineers in the country are using concrete for dams and such work. It seems splendidly fitted for it. In most cases, unlike in building construction, such work is splendidly done, with the greatest care and under

such. And it may only be the matter of a year or ten years before the crop of concrete buildings lately raised may show similar signs of unexpected weakness.

It seems to us that concrete is a splendid material about which to theorize, to speculate, but that its tests and experiments should have been confined to the laboratory for a few years yet until Time had shown what its effects might produce upon this new material. To experiment in actual construction with so unknown a quantity is to play a game with human life as the stake. To us it seems a crime, but perhaps we are old foggyish, unprogressive, antiquated. Just the same, if we had a concrete dam or a concrete building on our hands just now we would examine it with the greatest concern and, if we saw flaws in it, we would hurry to brace it up, repair it and make it as safe as it is possible to make anything that has "begun to go."

The "New York Evening Mail" for Oct. 2d makes the following caustic comment on the Austin disaster:

"It will probably take an official investigation to find out exactly who is to blame for the bursting of the Bayless dam at Austin, Pa., but no investigation is necessary



In the recent deplorable Austin dam disaster, which caused such stupendous loss of life and property, it is interesting and gratifying to note, that the brick building, shown above, was the only structure left standing in the path of the flood.

the constant and most exacting supervision of skilled engineers. (In building work the supervision is generally left to most unskilled foremen and the instruction to them seems to be to skimp in material and quality wherever possible). Yet, even under such favorable conditions, failure after failure occurs. The trouble must be inherent in the material. It is all so new. There is so little experience to draw upon. It is all theorizing, speculation and hope—no certainty.

Whatever has been done in other countries and in olden times with cements can be no criterion for the present. We are handling new cements, our climate is different, our rivers carry manufacturing refuse that creates chemical actions never heard of before. From the day cement is put into place a chemical action goes on, it is influenced by a thousand conditions that engineers may only suspect. In brief, cement is in an absolutely experimental condition. Some of it has been in place just about long enough to show the results of weather, chemical action, electrolysis and the other infinite tests to which it has been exposed in actual practice and we are reaping a crop of broken dams, bridges, crumbling walls and

to prove that the dam was not properly looked after, and that the repair and use of it had been such as to endanger life and property.

"The reports from Austin tell us that the concrete dam had already developed defects; that these defects had been patched up, and the full water pressure allowed to rest upon the patched-up portions of the structure.

"The break was the inevitable result of these proceedings. The reinforcing steel, inadequate to withstand the pressure, yielded like so much straw.

"There is a tendency on the part of many users of concrete, and of some engineers, to suppose that it will support anything—that it is immovable, uncrushable, all-powerful. Nonsense! Concrete, in the last analysis, is a form of mud. To make rock of it, it must be knitted as the rocks have been knitted. And to accomplish this, true science is necessary.

"All about us, in walls, sidewalks and elsewhere we may see, every day, improperly treated concrete, swiftly returning to its original state of mud and dust. Alas for those humans who, like so many of the people at Austin, must return to dust along with it!"

BLACK HAWK BRICK

This High Quality Pressed Brick, in a Variety of Attractive Shades, Finds a Ready Market Throughout the Western States.

Black Hawk was a famous Indian chief; in fact, was a "heap big Injun," and today on his old battlefield, at Sears, Ill., is located a plant where they make a "heap big brick."

The Black Hawk Clay Mfg. Co. has its general offices at Davenport, Ia., just across the river from the plant. The plant has been operated since 1888 and has principally been engaged in the manufacture of paving brick, but was never on a successful basis until taken charge of about six years ago, by Mr. Chas. S. Englebrecht, who it will be remembered was formerly connected with the Twin City Brick Co., of St. Paul, Minn. Since he took hold of it, the plant has been completely rebuilt and it is now one of the model yards of the Middle West, making a high grade pressed brick and having an output of 40,000 per day.

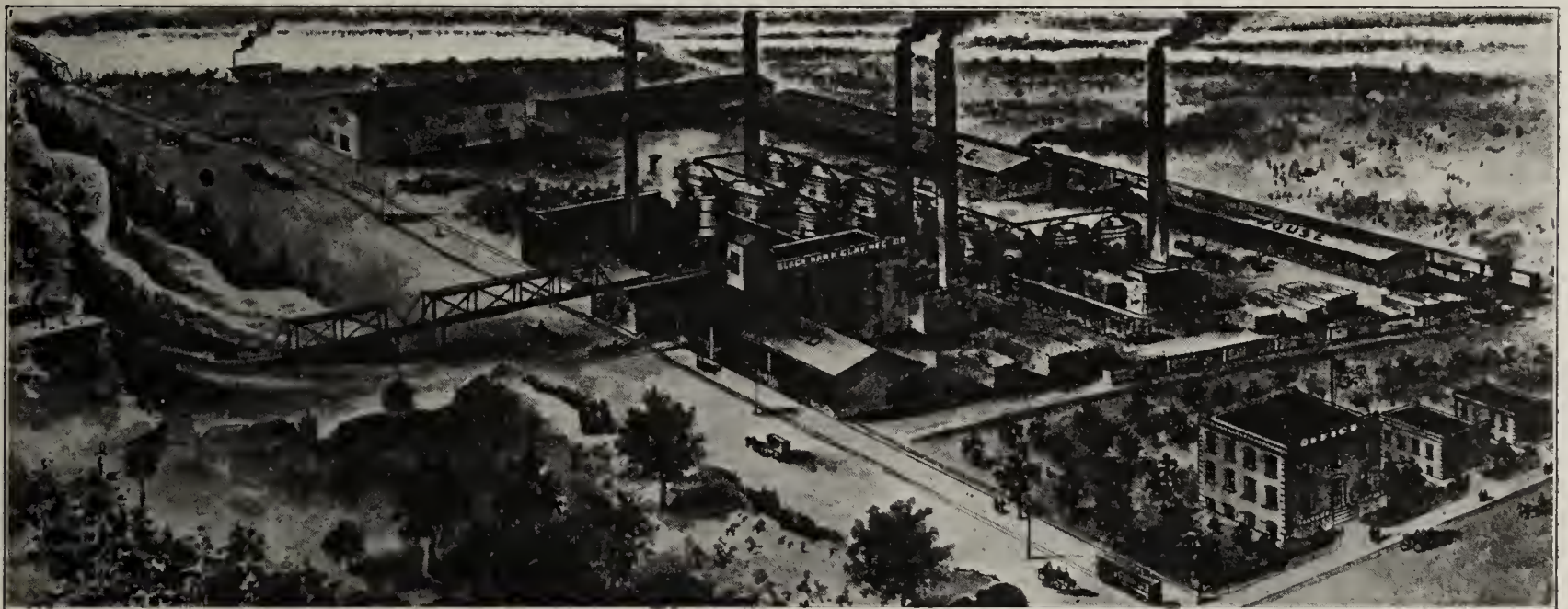
Black Hawk brick is of high quality and is in popular favor throughout a considerable territory. The brick ranges in color from a black to a cherry red and is well

The kiln equipment consists of a battery of ten round down-draft kilns and two square down-draft kilns.

Black Hawk brick finds a market covering a large territory, being used to a considerable extent in the Chicago market and also being shipped as far as North Dakota and even to Winnipeg.

Mr. Englebrecht, the manager, is an up-to-date clay man and believes in the theory that if a thing is worth doing at all, it is worth doing well. He has spared no expense or pains to perfect his plant and the success and prominence of Black Hawk brick today are largely due to his enterprise and ability.

The Baker (Ore.) Fire Clay Co. is now going through some experimental work. The company controls 400 acres of clay land where the deposits are estimated to have a maximum depth of 600 ft. and are said to possess high refractory qualities. This clay will be used for the principal product of the plant—fire clay and fire brick.



Splendid Plant of the Black Hawk Clay Mfg. Co., now Occupies the Site of the Former "Happy Hunting Ground" of the Sioux Indians.

speckled with iron spots, giving it an attractive variety in shade and texture.

The plant at Sears, Ill., is well equipped with machinery and is operated along modern lines. Included in the equipment are a four-mold Standard Boyd press and a four-mold U. S. press, a Boyd mixer, a Frost dry pan, two Frost engines, developing 225 h. p., a complete electric lighting plant and a gasoline waste-heat drying system.

Through the use of fans, the waste heat is taken from the cooling kilns and used to water smoke the new kilns, a method which has proven very successful and economical. Mr. Englebrecht says that through the use of this system a saving of 45 per cent of fuel cost has been effected and the time of burning has been reduced from 35 days to 9 days, and that further than this, the kilns now run 95 per cent of No. 1 face brick, giving an increase in the output of No. 1 brick.

The equipment also includes a Vulcan steam shovel. The material is a fine shale, of which there is a deposit showing a 48-ft. face. The stripping is an excellent molding sand which has proven of marketable value.

FRIENDLY TO BRICK.

The "Christian Science Monitor" frequently takes occasion to say a good word for "brick" in its columns, of which the following is an example:

"Since the brick-making interests along the Hudson river have formed a corporation, it is to be hoped they have built a foundation that no governmental tide can overturn."

GOOD SEASON'S BUSINESS.

We are advised that business has been good with the sewer pipe manufacturers in the Ohio Valley this season. The American Sewer Pipe Co. has operated all of its plants in the East Liverpool district steadily, while the independents in the lower part of the Ohio Valley and in the Yellow Creek districts have been equally successful in securing orders.

The Iron River Hardware Co., of Iron River, Wis., is occupying its new buildings, and is making a feature of the sale of building and mantel brick.

UP-TO-THE-MINUTE ADVERTISING.

That the management of the United States Tile Co., manufacturers of roofing tile and terra cotta trimmings, at Parkersburg, W. Va., are "live wires" and thorough converts to modern methods of publicity, is evidenced by the splendid "literature" which they have recently gotten out, explaining the merits of their product.

They published a series of "30 Roof Talks" in their local paper—one each day for a month—after which reprints of the articles were made and bound for distribution to the trade. These "talks" made a "happy hit" and proved to be very popular, several public libraries requesting copies for their shelves, and their pulling power is evidenced by the general satisfactory results in the way of business.

Catalog No. 6, an attractive booklet also issued by the company, is replete with information as to the history and manufacture of roofing tile.

A letter recently received from Mr. E. P. Elzey, the genial manager of the company, shows that he is richly endowed with the saving grace—a sense of humor—and we take pleasure in reproducing herewith a portion of the letter, as follows:

"Editor of 'Brick and Clay Record': Our plant is a 'brick plant,' it is built of brick—it is not a brick plant for the reason that we do not manufacture brick—we bought the brick of which to build the plant and manufacture roofing tile, roof trimmings and ornaments—burned clay wares exclusively—but this is not what we started out to say—we wanted to say that your publication was a 'brick'; no not a 'brick' but a 'clay products publication,' and because it is a 'brick' and is not a brick we are for that reason sure of our genuine appreciation for it. We like the idea that 'Brick and Clay Record' is disposed to feature all burned clay products and consider the fact of great importance toward the expediting of the inevitable 'Clay Age,' that is soon to dominate the building world.

"Burned clay and shale products only need the proper exploitation that they may be universally used and the 'waking up' of the manufacturers of such wares in the last few years has given an impetus to the use of these indestructible materials that will permanently place them where their merit and qualities entitle them to be.

"Burned clay products are fast becoming the generally recognized superior building material—the lateness in reaching this recognition has been largely attributable to lack of 'real advertising' among clay ware producers—we have failed to properly educate the building public while manufacturers of substitutes have flooded the country with a preponderance of ingeniously prepared 'stuff' which, in some cases, does not come far from being deceiving in its claims.

"It is our pleasure to 'preach' brick and we have great pleasure in commending the policy of your publication which is broad enough to be a clay products publication—let the good work go on—and—

"May you live and prosper with bricks around you,
And long, long the time till bricks surround you.

"Yours clayfully."

EFFECTIVE ADVERTISING.

The New England Brick Co., manufacturers of sand-lime brick, with factory in Farmington, Conn., has adopted the novel but successful manner of advertising, of displaying their samples at the different fairs which are being held in New England.

EFFICIENT LOCAL ADVERTISING.

The work of advertising in local papers which was advocated so strongly by the Building Brick Association at the Louisville convention has been put into general use by many leading clay manufacturers throughout the country.

This "publicity work," while still in its infancy, is resulting in much good and has had a decided effect on the general public—causing a revival of interest in brick as a model building material, as well as bringing business direct to the advertiser.

In a recent issue of "The Atlanta (Ga.) Journal" there appeared a full-page "story" describing Atlanta's new city schools and Tech. shops, which are considered the finest educational structures of their kind in the South.

The face brick used in constructing these buildings were manufactured by the Standard Brick Co., of Macon, Ga., of which Mr. W. E. Dunwoody is the president. It is said the Standard Company employs the largest force of men, at its plant, of any brick concern in the South, turning out annually the stupendous quantity of one hundred million brick.

Being centrally located, the company has splendid shipping facilities. The "Atlanta Journal" states:

"As an example of the wide territory covered by this Macon industry, they recently received an order for 300,000 brick for immediate delivery to Tampa, Fla., where the material will be used in the construction of a large manufacturing plant. This is the day of the specialist, and the Standard Brick Co., of Macon, make a special face brick for school buildings, another for depots, one kind for churches and still another for residences. The clay from which these brick are made is of so fine a texture that beautiful and elaborate vases and ornamental facades are often made on special orders from practically the same material that is used in manufacturing the face brick."

ANOTHER LIVE ONE.

Another manufacturer who is "making trade" by home advertising is the Shackelford Brick Co., of Des Moines, Ia., and herewith is shown a reproduction of a four-col-

<p>BRICK The Economical Building Material</p> <p>brick building costs a little more than frame, but it will last indefinitely—no paint, no repairs—less insurance. In ten years the saving in these items alone will make up the difference in cost and leave a good profit.</p> <p>Use our Impervious Face Brick and Builders.</p> <p>Annual output 24,000,000. First class shipping facilities.</p> <p>SHACKELFORD BRICK CO.</p> <p>Makers of Des Moines' Best Brick</p> <p>PHONE 358</p>

umn-wide "ad" inserted in "home" newspapers by this company. It reads "to the point" and might well be copied by other manufacturers in different sections of the country.

CAPACITY INCREASED.

The Progressive Brick Co., with offices in the Heed building, Philadelphia, have reopened their plant at Palmyra, N. J., which has been closed for some time. Additions have been made to the plant, including a new press and the capacity much increased thereby. The company report that they are easily able to get from \$7.00 to \$14.00 per thousand for their brick, and that they can dispose of all they can make. The capacity of the plant will now be 15,000.

TWENTY-FIVE THOUSAND SAVED

Burned Clay, in the Form of Denison Hollow Tile, Effects Saving of Thousands of Dollars in Construction of Hotel Statler

Burned clay in the form of Denison hollow tile saved the builders of the new Hotel Statler, at Cleveland, O., \$25,000 in the construction of that magnificent hostelry. This achievement marks a possible revolution in building construction and development in the use of burned clay of the utmost importance.

The new Statler, at Cleveland, will be one of the largest

face brick being required. The upper portion of the building will be finished in terra cotta.

The main feature of this great edifice, however, will be the adoption, for the construction of the walls, of the famous Denison hollow tile. The architects, George B. Post & Sons, well known as designers of some of the most important buildings in the country, adopted the



Hotel Statler under construction at Cleveland, the walls of which will be constructed of the famous Denison tile.

and finest hotel edifices in the country. This magnificent building was designed by the well-known New York architects, George B. Post & Sons, and the builder is James L. Stewart of Pittsburg. The building is now under construction at the corner of Euclid Ave. and East 12th St. and will be ready for service next fall. It is twelve stories in height and has a frontage of 104 ft. on Euclid Ave. and 340 ft. on East 12th St. There will be 700 bedrooms and 700 bathrooms, every room having outside exposure. The total cost of the hotel will be approximately \$2,500,000.

This building is of steel frame and burned clay construction and will be made absolutely fireproof. The facing for the first two stories will be of Indiana limestone and above that of pressed brick furnished by the Hydraulic-Press Brick Co., of Cleveland, 750,000 of these

Denison tile after a careful investigation of its merits, as evidenced by its successful use in many other buildings. They demonstrated to their entire satisfaction that this tile was most suitable for their purpose and that through its use a large saving could be effected. The estimates of the engineers show a saving to the builders of \$25,120 through the use of the Denison tile. This saving was effected in the following items:

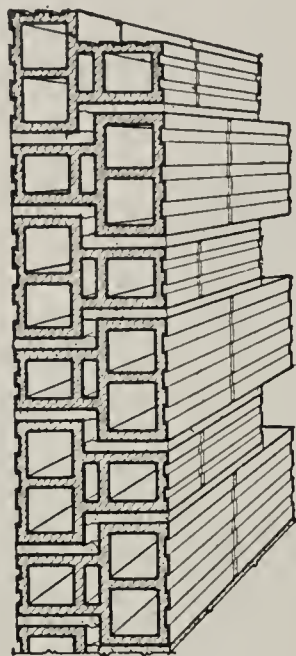
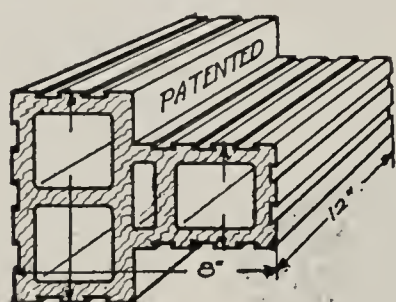
150 tons of steel, at \$45.00.....	\$ 6,750.00
122,683 ft. furring saved.....	13,495.00
Saving in mortar and laying up.....	4,875.00

A saving was effected in wall loads of 50 lbs. per square foot, a total of 3,000 tons. This represents a saving of steel as above noted. All furring was omitted, because walls built of Denison tile require no furring.

The four accompanying plates show fully the method of

wall construction through the use of Denison tile. Plate No. 1 shows a sample of the Denison interlocking tile. Plate No. 2 shows the manner in which this tile is used in an 8-in. wall, and plate No. 3 shows the manner in which it is used in a 12-in. wall. Plate No. 4 shows in detail the exact form of construction used in the Hotel Statler and the manner in which the face brick and terra cotta are bonded to the tile wall. It will be seen that the tile are peculiarly suited for the bonding of brick facing, such facing interlocking into the tile, making the strongest possible form of wall construction, interlocking into the wall by the headers.

One of the most important features in Denison tile wall construction is the elimination of furring. Denison tile, as will be noted by



EIGHT INCH WALL.

the illustrations, are guttered, permitting the strongest possible kind of mortar bond, and they are of such character as to insure the greatest possible cohesion of cement or mortar. This is a characteristic which makes this tile particularly available for the use of stucco or plaster covering for either interior or exterior work, and any kind of desired finish can be secured.

It may be interesting to those familiar with building construction to know that the horizontal manner in which Denison hollow tile are laid produces a stronger, more satisfactory and better load-bearing wall than is possible when tile are placed vertical, end on end. If such tile could be so matched that the ends of the webs joined perfectly to each other, making continuous vertical columns, the vertical method of laying might be the best, but it is a fact that in the laying of tile walls it is impossible to match the webs, with the result that there is no continuous columnar support. With the Denison tile, however, a perfect bed for the laying of the mortar joints is secured and the tile lock and match so perfectly, as shown by the illustrations, that series of supporting vertical columns are formed with an entire wall completed and formed in one solid bonded mass. The strength of these vertical columns can readily be seen in the illustration.

Another advantage is secured through the use of the Denison tile in the better air circulation in the walls. The two sections of the tile form practically two continuous air chambers separated by a partition of burned clay. In warm weather, the air in the outside chamber, being heated by the sun or outer atmosphere, will naturally rise, forcing the air in the inner series of chambers downward and then upward again, thus completing perfect circulation and aiding in keeping the interior of the building cool. In cold weather, this circulation is reversed, and the effect is the retention of the greatest possible amount of heat in the interior of the building, thus making the building warmer in winter and cooler in summer than is possible through other forms of wall construction.

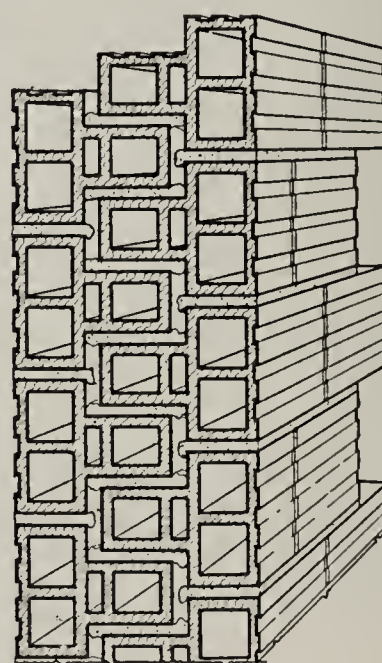
Denison tile has become very popular in many parts of the country. In the New York market it is manufactured and handled by the Great Eastern Clay Co., which

is selling immense quantities of the tile for all forms of building construction and is most enthusiastic regarding its future. In the city of Cleveland alone, Denison tile has been used in the place of frame construction, common brick and other material to an extent equivalent to the use of 50,000,000 common brick.

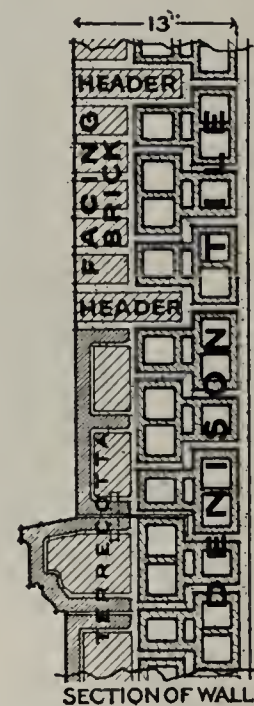
The Clay Product Co. have secured the Chicago territory for the use of this tile and will manufacture same on a large scale. There is considerable demand for territorial rights for the manufacture of Denison tile, and territory is fast being taken up by wide-awake clay products manufacturers. The Denison tile patents are owned by the Ohio Clay Co., whose main office is in the Schofield Bldg., Cleveland, O.

A MELON CUTTING.

The "Pittsburg Dispatch" states, that at a recent meeting of the directors of the National Fire Proofing Co., the usual quarterly dividend of 1 per cent was declared on the preferred shares of the company, payable October 16, to stock of record October 6. It probably will be of interest to know that this company has been awarded the contract for fireproofing with hollow tile the Woolworth Building now being erected in New York, which is to be the tallest structure in the world, rising 55 stories above the sidewalk to a height of 750 feet. The contract calls for 40,000 tons of material, one of the largest received for some time. The company's directors also report good business in Chicago. On account of that city limiting the height of building to 20 stories, after September 1, there was a rush prior to that time on the part



TWELVE INCH WALL



SECTION OF WALL

of prospective builders to take out permits for structures before the ordinance went into effect. The company has been maintaining a conservative policy, believing, in so doing, that the interests of the stockholders are best conserved. The Canadian branch of the company is said to be doing a very nice business. The company is having a big demand for hollow tile for residential construction.

"Business men fail because there are a lot of them fools. We are all born fools, but some of us educate ourselves out of it."

The Bolivar (Pa.) Fire Brick Co. has purchased 310 acres of land in West Wheatfield township, just across the Conemaugh river from Bolivar. This land is all underlaid with the clay that has made the output of the brick kilns at Bolivar famous.

ENAMELED BRICK

By E. Hardy, Momence, Ill.

The enameled brick industry has had its share of the growing prosperity. The demand has steadily increased since the beginning of the year, and the autumn finds all the yards running at full capacity to keep up with the demand. The only complaint heard is that of low prices. The greatest demand has been for white and cream shades as usual. Some orders have been booked for granite-colored brick with only an occasional inquiry for other colors.

Enameled brick are rapidly coming into increased popularity, and the high-grade brick that are now being put on the market are winning the confidence of those architects and builders who were previously skeptical as to their lasting and wearing qualities. Formerly these brick were only used in light courts, basements, elevator shafts and other places where light and cleanliness were wanted, but they have been steadily gaining favor as a front brick. It has taken time to convince architects that they were worth considering for fronts, and it was only in small buildings where they would permit their use, but the appearance was so pleasing and the cleaning of the walls so easy that they have been used on a much larger scale.

Perhaps one of the best examples of this class of buildings is the new Steger building in Chicago. It is faced with a cream colored brick and trimmed with terra cotta of the same shade. Standing as it does on a corner with no other high buildings near it, it necessarily attracts much attention and has won favorable comment from the building trade.

The outlook for the coming year is good and should the demand keep up 1911 will, undoubtedly, be the banner year in the enameled brick industry.

A little review of some of the processes of enameled brick manufacture may be of interest.

The processes in general use are known as the one-burn and two-burn processes. Enameled brick have been made by the three-burn process, but the cost of manufacture is too high and the fact of the matter is that it is altogether unnecessary. The one-burn and two-burn processes may each be subdivided into the high-fire and low-fire processes, the open and closed setting and so on. Any one of these may be chosen or parts of all of them. Nearly all the English brick are made by the high-fire process and makers claim that a good brick, one that will stand up under any and every condition, cannot be made by any other process and as proof, point to the excellence of their product.

If there is a high and low-fire process there must be a dividing line between the two. If this were not true the term would have no meaning. This line comes between cone 02 and cone 1. That is all temperatures below cone 02 would be low-fire and all above cone 1 high-fire. If we consider first the clays that can be used at high-fire temperatures, we shall at once see that nearly all red-burning clays would be ruled out, and justly so for red clay is the poorest material out of which enameled brick have ever been made. It is altogether unsuitable and ought never to be considered. Enameled brick have been made of red clays but have always been considered a poor quality. They have generally been covered with a tin glaze and could not be made any other way. For the manufacture of enameled brick, then, the only clays worth considering are of a buff or a cream shade. There are plenty of these clays that may be used

in the low-fire process but to make them this way the glaze will have to be either a raw-lead glaze or a fritted glaze. The objection to the lead glaze is that the lead is a poison and must be handled very carefully. Lead poisoning became so general in the potteries and brick works of European countries that it became necessary to make laws prohibiting its use in raw glazes. This made the use of frit essential. Boracic acid may be used, but as this is a soluble compound, it must be reduced to an insoluble form before it can be employed. This is true also of the compounds of Na and K. Fritting is the only way. This all adds expense to the glaze. Another thing about these low-fire glazes is that they are more apt to craze and flake off than the raw-feldspar glazes. The only thing that I can see in favor of the low-fire process is a small saving in fuel.

Without the use of lead or some of the soluble fluxes it would be impossible to make a glaze that would mature under cone 1. Seger in Vol. 1, page 430, says that lead should not be used in a glaze maturing above cone 1 and gives as his reasons that "above this heat it is not possible to work with a lead glaze as lead has the great disadvantage of volatilizing easily under the influence of fire gases. Through this peculiarity, the glaze grows constantly more acid, making it more difficult to fuse and hence fails to come up bright." So it can readily be seen that to make a brick with a raw glaze, we must have a clay that will vitrify above cone 1. This clay must be looked for among the No. 2 fireclays and not all, or nearly all, of these are satisfactory.

The clay that makes a good enameled brick is not easily found. I know this from experience for I have tested a large number of clays from different parts of this and neighboring states, and have not found very many that I considered satisfactory. One way of getting around this is to mix two or more clays together in varying proportions until the desired mix is obtained. One clay might be too "fat"; another too "lean," but by mixing these together an available satisfactory material might be obtained. Again, mixing grog with some clays would help. If the two-burn process were employed this would be one way of getting rid of the spoiled biscuit brick. Some clays work better in the dry-press than in the plastic machine. In some cases the reverse is true and this brings us to a comparison of the two methods or processes. As I have said before, the one-burn process and two-burn process are those in general use. The terms are self-explanatory. The one-burn process consists of putting body and glaze on the unburned brick and then firing and finishing them at one burn. The brick will have to be made by either the stiff-mud or soft-mud process, the stiff-mud being preferred, and a repress being necessary. The glaze and body may be put on while they are soft or the brick may be dried, bone dry when dipped or the body may be put on while the brick is soft, then dried and the glaze put on just before going to the kiln. One objection to dipping brick while they are soft is that they cannot be handled without leaving finger marks on them. Another reason is that the glaze or body remains soft so long that it is liable to be covered with dust and then when burned this shows in black, disfiguring spots.

The plastic brick may also be used in the two-burn process. We have no choice with the dry-pressed brick. These must be made by the two-burn process. If dipped

in the clay state, the expansion caused by the addition of so much water results in the cracking of the face and its falling away from the drier portion of the brick. The process is the same as for any dry-pressed brick up to the time the enamel is applied. If made plastic the brick may be set straight from the drier, or the body may be put on and burned in the first burning. Then only the glaze would have to be put on for the second burn.

In considering the advantage of one process over another, the first thing to be observed is the difference, if any, in cost. This is certainly in favor of the one-burn process, but not to a very great extent. The extra expense of setting, burning, drawing, labor and fuel in the two-burn process would not cost over \$5.00 per M at the outside. If we get 10 per cent more good brick by this process than by the other, it would pay to use it. It is claimed by some makers that a larger per cent of first-class brick can be obtained by the two-burn process. This is true if you figure the brick in the finished kiln alone, but if you consider the brick made from the machine as a basis a different result is obtained. If we make a thousand brick at the machines and biscuit them, we would probably lose from 10 to 15 per cent in the extra handling and burning. Then if we got 85 per cent first-class brick from the finished kiln we would be getting 85 per cent of 850 to 900 brick instead of 1,000. So we would be doing just as well if we got 75 per cent by the one-burn process. I have mentioned the loss by biscuiting. We all know that the more we handle brick the more spoiled brick we get.

One of the conditions on which we sometimes get orders is time of delivery. If we are running at full capacity and selling all we make there is no chance to stock brick. Therefore, it makes a difference whether we can deliver in two weeks or four. The one-burn process has the advantage here, for if we cut out the time needed to biscuit the brick we reduce the time from clay-bank to stock-shed from one-third to one-half.

It must not be thought, however, that all the advantage is with the one-burn process. A brick that has been biscuiting has already been subjected to considerable shrinkage and all of the organic matter has been burned out. It may also be burned up to the point of vitrification and a body and glaze applied maturing at a lower temperature than is needed for the burning of the brick. If this is not intended, it is not necessary to burn the biscuit brick so hard. If half of the shrinkage is taken out it will be enough. They ought, however, to be burned up to this point without making rough edges and broken corners. When burned to this point they will absorb moisture very readily and can be taken to the enameling rooms, dipped, knifed and set at once. It would be impossible to do this with plastic brick, as they absorb the water from the glaze and body very slowly; the face becomes soft, and they have to be partly dried before brushing and setting.

In one other respect the dry-pressed brick have the advantage. This is the finish. A repressed stiff-mud brick can never be made with the same perfect face as the dry-pressed brick. All repressed brick have more or less of a wavy-face effect. This is not so noticeable on a facing brick, but when the same brick is covered with a bright glaze, these imperfections are shown up in a very clear manner. With the dry-pressed brick, properly dipped, there is no waviness. The wave effect is noticed in the plastic brick whether burned once or twice. The greatest advantage the one-burn process has over the two-burn process is in the cost of equipment. Under the two-burn

process more kilns would be needed to handle the same output than under the one-burn. A kiln, holding 45,000 to 50,000 English-size biscuit-brick would hold 25,000 to 30,000 of the same brick when set as finished ware. These brick might be set in saggars and then the same kiln would only hold 7,500 to 10,000. Brick are made this way sometimes, but where the profit comes in I have never been able to find out, for we would need about two biscuit kilns to three finishing kilns, and the cost of additional kilns is an important item.

What has been said, certainly seems to favor the one-burn process, and this is the cheapest way oftentimes, but when all has been said and done, the way they are made will depend entirely upon the clay used. I could proceed and tell you just what kind of clay is needed, and you may be able to find just such a clay which, when tested, will be what you do not want. What I am going to say about clay is only in a general way.

The clay to be right must burn to a light color with a shrinkage of not over one inch to the foot. It should be free from iron, for if it has too much it is liable to burn through the face, giving the brick a mottled appearance. Too much lime is also bad. If made by the stiff-mud process, the clay must be free from laminations. The proportion of alumina to silicate should be as one to three. The clay should be able to keep its shape at a higher temperature than the point of vitrification; that is, there should be a wide temperature range between the point of vitrification and fusion.

BETTERWARE POTTERY CO.

The Betterware Pottery Co., of Zanesville, O., organized, controlled and operated by members of the negro race, has opened offices in the Place Hotel, Chestnut street, with Messrs. Howard and Hamilton as their special representatives. The company is incorporated under the laws of the state of Ohio and its capital stock is \$10,000.

Messrs. Howard and Hamilton are in Youngstown, O., to interest the colored people in the venture, and if they are successful a store-room will be rented and their ware placed on sale in that city. When operating at its full capacity the pottery will employ about 100 men.

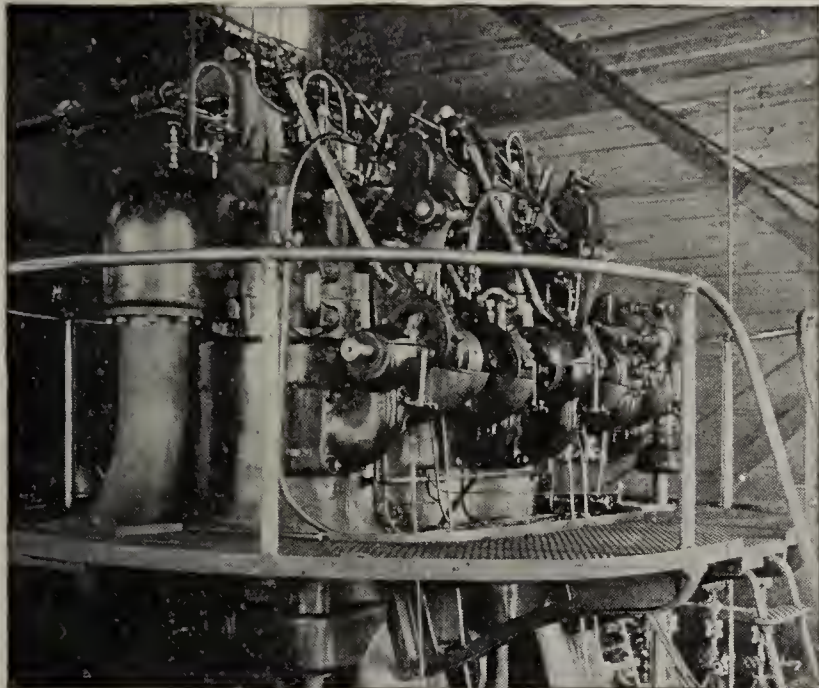
FORTY-TWO-STORY BUILDING.

"The highest building outside of New York," says the "Record and Guide" of that city, which states further that the L. C. Smith estate of Syracuse, New York, has completed final arrangements for the immediate construction of a 42-story office building at Seattle, Washington, to cost nearly \$2,000,000. The structure will be the tallest in the world outside of New York City, as it is to have the height of 468 feet above the curb level. Burned clay products will play an important part as large quantities of brick and fireproof will be necessary in the construction of this mammoth building. It will stand at the northeast corner of Second avenue and Yesler way, the common center for the street and interurban transit lines of Seattle, and the center of the business section of the city.

The main part of the building will have twenty-one stories fronting on five sides, topped by a square tower of twenty-one stories. Above the first floor of stores will be 540 offices in the main building. In the tower will be sixty more. The thirty-fifth story is to be left for observation

NEW TYPE OF OIL ENGINE.

With the increasing effort to secure more economical methods of manufacture, our clayworker readers will be interested in the new Diesel type of crude-oil engine recently placed on the market by the Atlas Engine Works, of Indianapolis, Ind. This engine has special merits which seem to make it particularly suitable for clayworking



Three-quarter View, Above Deck, of Atlas Oil Engine.

plants, and the manufacturers claim that with the exception of natural water power, no other power proves so economical.

The record of this engine, both here and abroad, its general adoption by the leading manufacturers of England, Russia, France, Germany and Belgium, and its installation on some of the largest war and merchant vessels afloat, proves conclusively that it is the machine destined to eventually replace steam power. Since it has been so successful abroad, it is only natural that it should be of great interest to manufacturers in this country, and it has become so, solely because of its remarkable economy and absolute dependability. It occupies much less space than the old-time boiler and engine equipment, and this is important.

The distinctive feature of this type of engine is, of course, its wonderful economy. The simplicity of the Atlas oil engine as compared with previous types, is interesting. Complete valve mechanism is accessible from the outside. There are no working parts in the crank case except the shaft and connecting rod, the cylinder head can be removed without disturbing any of the valve adjustment, and practically every other adjustment can be made easily and quickly, and without shutting down the engine. This is an important point. The Diesel principle of fuel combustion is followed closely. There is no complication of parts. Fuel is controlled automatically, so closely that the amount used at half load is just about one-half that used at full load. The engine develops one brake horsepower on less than one-half pound of fuel oil of average calorific value and weight which, figured at two cents a gallon (the present average price) would cost \$1.35 per ten-hour day for 100-b. h. p., or \$2.00 per day for 100 kw.

It saves about 45 per cent over the heat required to operate a producer gas plant and about 80 per cent over steam in continuous operation, does away with boilers and all fire room expense, doubts about coal supply, ashes, and the time and fuel wasted in getting up steam. It can

be started at any time in one minute and, when not running, no fuel is consumed. It is sold on definite guarantees of fuel consumption.

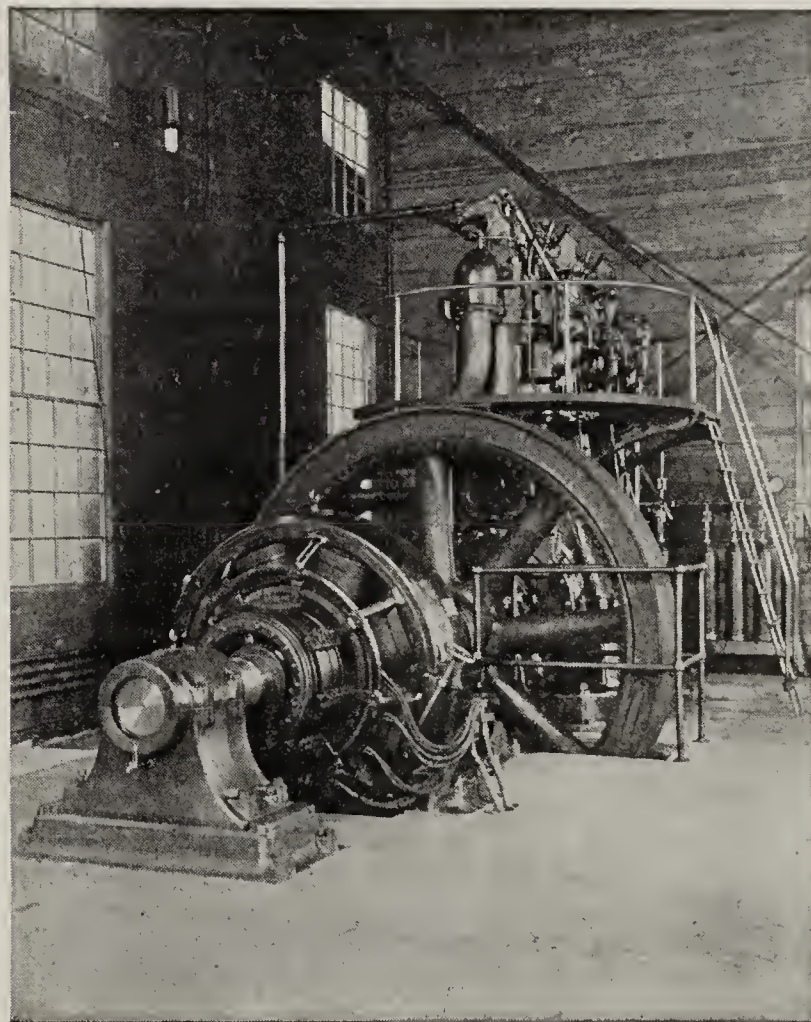
The engine is built in sizes of 300, 450 and 600-b. h. p. (2, 3 and 4 vertical cylinder machines). A very interesting test has recently been made of one of them by C. E. Sargent, M. E., of Chicago, and a report of it, together with a brief bulletin describing the engine, is worth reading by any one interested in the problem of economical power. Both may be had upon application.

ASKS RECEIVER.

Asking that a receiver be appointed for the William Brunt Pottery Co., Lisbon, O., and that an accounting be had with the stockholders, Alice, Alina and Myrtle Cartwright and Sarah and Harry Deidrick, owning \$27,000 of the \$100,000 of the capital stock of the institution, have filed their petition and secured a temporary injunction against William and Adaline Brunt, Belle Green, Hattie Maxwell, Alice Way, Harry Brunt and Edna Isham, the remaining stockholders of the organization.

The petition claims that the pottery operated by Brunt has not paid a dividend in the last 15 years. It is alleged that the company has exhibited mismanagement in every department.

The injunction was granted and the petitioners asked that the receiver, on the hearing of the case, be ordered to sell the property, collect its assets and pay the bona fide debtors out of the funds thus received. The plant



Direct-Connected Atlas Crude-oil Engine and Generator.

is to be turned over to a receiver, and its books, records and accounts placed in his hand for auditing.

IS BUILDING BIG KILN.

Squire Brickey has completed the kiln which he has been building for the Tygart Brick Co., Portsmouth, O. There were 150,000 brick used in the kiln, which is 42 ft. inside by 16 ft. across, 14 ft. high, 5 ft. thick and 46 ft. long.



BRICK AND CLAY RECORD

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EDITORIAL COMMENT.

Since the organization of the Greater New York Brick Co. many problems difficult of solution have confronted the organization, demanding decisive action.

All new movements calling for the enactment of novel measures, mean the turning over of old, settled, cut-and-dried methods, and there are always a sufficient number of "knockers" who stand in the way of progress, block the wheels and refuse to budge.

There is reported to be some dissatisfaction among the members of the Greater New York Brick Co. regarding the failure of the new selling arrangement to make good on its promises. Some members object to carrying weaker ones, especially in view of the fact that the profits this year were small. The independents are bestirring themselves—the cement people are putting on their "fighting clothes"—and, taking it all in all, there are indications of interesting times in prospect down in old New York. Mr. Allen Beals, our New York correspondent, writes interestingly as to developments in the East in "Our Eastern Letter" in the Trade Review. The outcome of this movement in the East will be watched with interest by all clay manufacturers throughout the country, as much will depend on the outcome of this trial of new selling methods.

Our bump of modesty, which, you have perhaps noticed, is almost abnormally developed, forbids us to mention the fact that our "paving number," of September 15, made a decidedly "happy hit," resulting in a large number of inquiries from interested parties, both in this country and abroad. We have had requests for samples of paving brick from England and Austria, as well as from many states in our own country. As mentioned before, our "modesty" forbids us to enlarge on the subject.

Most clay manufacturers realize that it does not do to reduce an employe. If a man cannot make good at the head of a loading or setting crew, he would be more than human if, when reduced to the ranks, he did not try to make it "hot" for the man who took his place, thus stirring up discontent among the crew.

It is encouraging to note that throughout the entire country there is much thought and study being given to methods of lessening fire hazards. Most cities, after years of painful and expensive experience, are extending their fireproof "zones" and prohibiting the construction of "third class" or wooden structures in congested districts.

The city of Boston, awakened to a sense of the fire danger existing in that city, and to its need of better fire protection, has, through its Chamber of Commerce, recommended the adoption of stringent measures which might seem to be quite radical, at first thought, but, viewed from the standpoint of future development, the wisdom of the measures is apparent.

The "Boston Traveller" makes the following comments on the subject:

"The Chamber points out that fire peril is far less in foreign cities, because most city buildings abroad are of fireproof construction; there are more rigid building rules, and they are more strictly enforced; also because in Europe fires are considered crimes against the community, and the causes are ferreted out by fire marshals and guilty persons are punished, whereas, in America a conflagration is generally regarded as an 'act of God.'"

A fireproof Boston is a praiseworthy ideal of the future, and any step toward the goal should be encouraged.

THE CLAYWORKER'S ENCYCLOPEDIA.

Our Detroit correspondent gives us the following interesting information in connection with the paving investigations in progress there:

"A special committee from the Board of Commerce is investigating the paving brick conditions in this city. The committee, during its investigation, has referred frequently to copies of 'Brick and Clay Record' that have been put before it. In a recent edition of your journal attention was directed to the qualities of good brick, and the board is taking this as a standard in its investigations. Particular attention has been paid, during the past month, to one stretch of pavement, the brick having been furnished by an Ohio company. The brick hardly reached the requirements of the board, and the commissioner of public works was called to explain why it had been laid."

GLANCE THROUGH

the Classified Ad Department of our journal, just as you do the "Trade Review." You will find that many of these little notices contain real news.

Who knows but maybe you will see some "lead" there which, if followed, would mean the making of a fortune.

Perhaps you have some Money you wish to Invest—the Opportunity is there. Perhaps you wish to secure a Position—or perhaps you need a Superintendent—perhaps you have Clay Lands for Sale—numberless good business deals have been "pulled off" through the agency of a \$2.00 Want Ad in "Brick and Clay Record." Look them over in this issue. If you do not find what you are looking for, send us an Ad for our next issue—rates \$2.00 per inch.

FOR OUR ARCHITECT FRIENDS.

We not only want the architects throughout the country to take an interest in the big clay products show to be held at the Coliseum, next March, but we want them to show us how to make it beautiful. For the purpose of bringing out the opinions and suggestions of the architects of the country, "Brick and Clay Record" is going to give them an opportunity to earn valuable cash prizes through the submission of designs suitable for exhibition structures. The publishers therefore hereby offer the following cash prizes for the best designs of exhibit structures for use at the clay products show to be held at the Coliseum, March 8th to 12th, 1912:

First prize	\$100.00 cash
Second prize	50.00 cash
Third prize	25.00 cash

Specifications.

There is no limit placed on the elaborateness or cost of the supposed exhibit structure. The only limitation is that it shall show the use of the brick manufactured by the exhibitor through its use in wall facings, arches, columns, windows, walls, porches or other forms of architecture in which brick can be used to advantage. The structures must be planned to occupy a space not in excess of 20x50 ft. frontage on the aisle. Designs submitted should show the front elevation of the structure, but may also show the exposed interior.

A well-known brick man and two well-known architects in Chicago will be selected as judges and the utmost care and fairness will be shown in the treatment of the contestants. The contest will close November 15th, and all designs should be submitted to the publishers, 445 Plymouth Court, on or before that date. The plans should be enclosed in a blank envelope with no writing either on the design or on the envelope to indicate the author, but with the name and address of the sender enclosed in a blank and unidentifiable envelope attached to the copy submitted. When received the sealed address and the design will be marked for identification and separated so that it will be impossible for the judges to identify the authors of the designs submitted and the contest will be settled purely on its merits.

All designs submitted will remain the property of the publishers. Orders for working drawings of any of the designs submitted, may be furnished to the prospective exhibitors by the architects, by special arrangement between them.

As the time of this contract is limited to such a short period, it is expected and hoped that architects will get busy on the same very promptly. Each one has the same advantage and the prizes will be easy money for some one.

Brickmakers throughout the country are urgently requested to induce architects of their acquaintance to enter designs in this contest. Address all communications to the Kenfield-Leach Co., 445 Plymouth Court, Chicago.

INTERESTING SEMI-ANNUAL MEETING.

The semi-annual meeting of the board of directors of the Building Brick Association of America was held in their main office in the Flatiron Building, New York, September 18th and the session occupied the entire forenoon and afternoon. Out of the twenty-five present directors of the association, thirteen attended this meeting, as follows: E. J. Burke, F. W. Butterworth, J. Howard Chambers, J. Parker B. Fiske, William Hanley, E. L. Ives, H. J. Jova, H. C. Kley Meyer, T. C. Moulding, R. L. Queisser, Eb. Rogers, John W. Sibley and Ralph Simpkins.

The fact that some of these gentlemen came from as

far west and south as St. Louis, Chicago and Birmingham, as well as points nearer to New York, is an indication of the lively interest taken in the work of this association by leading brick makers.

A number of routine and minor matters were quickly disposed of and a study was then made of the work of the association thus far this year, and plans were discussed for the continuance of the work upon an enlarged scale. Despite a shortage of funds it was unanimously voted to proceed without hesitancy and carry out the advertising program formulated by the executive committee at its May meeting; this includes advertising in the following magazines for the balance of the year: Saturday Evening Post, Everybody's Magazine, Literary Digest, Cosmopolitan, McClure's, Craftsman, Country Life in America, Suburban Life and Good Housekeeping.

Several members of the board reported enthusiastically on the results of the advertising, as reflected in their own business, among whom was Mr. Thos. Moulding, of Chicago, who stated that he had been able recently to convert two large building operators from wood and stucco to brick, with a result that many hundred houses would be built of brick in the future, which otherwise would have been of wood or stucco.

Considerable discussion took place regarding the possibility of a movement for more favorable and equitable freight rates on brick, attention of the directors being called to the fact that present rates on brick are higher than those on corn, wheat, breakfast foods, steel, cement and many other commodities, the value of which and the risk of transporting which is far greater than in the case of brick, and a committee of three was appointed to look into this matter and to formulate some plan to be brought before the annual meeting in March, whereby concerted action may be taken by the brick interests in the near future.

The hearty sympathy of the Greater New York Brick Co. was presented by Mr. Jova, who is a director of both organizations, and a subscription of \$1,000 was received from the Greater New York Co., payable quarterly, to assist in the advertising campaign.

It was voted to continue, for 1912, the same membership dues as are now in force.

The entire meeting was marked with interest and enthusiasm and will go down in the annals of the Association as one of the best ever held.

VOLUME THIRTEEN.

There has just been issued the thirteenth volume of the "Transactions of the American Ceramic Society," containing papers and discussions read at the annual meeting held at Trenton, N. J., in February, 1911, with other contributions added.

The book is a volume of over 800 pages and is a very valuable addition to the clay literature of the country. It contains 53 papers on various subjects, relating to the practical operations of clay working plants, as well as the more technical questions involved in ceramic studies. It is a mine of information for the clay worker and the industry is greatly indebted to the men responsible for its preparation, and to the society which makes the gathering of such important information possible.

Copies of this volume may be purchased at the office of the American Ceramic Society, Columbus, O.

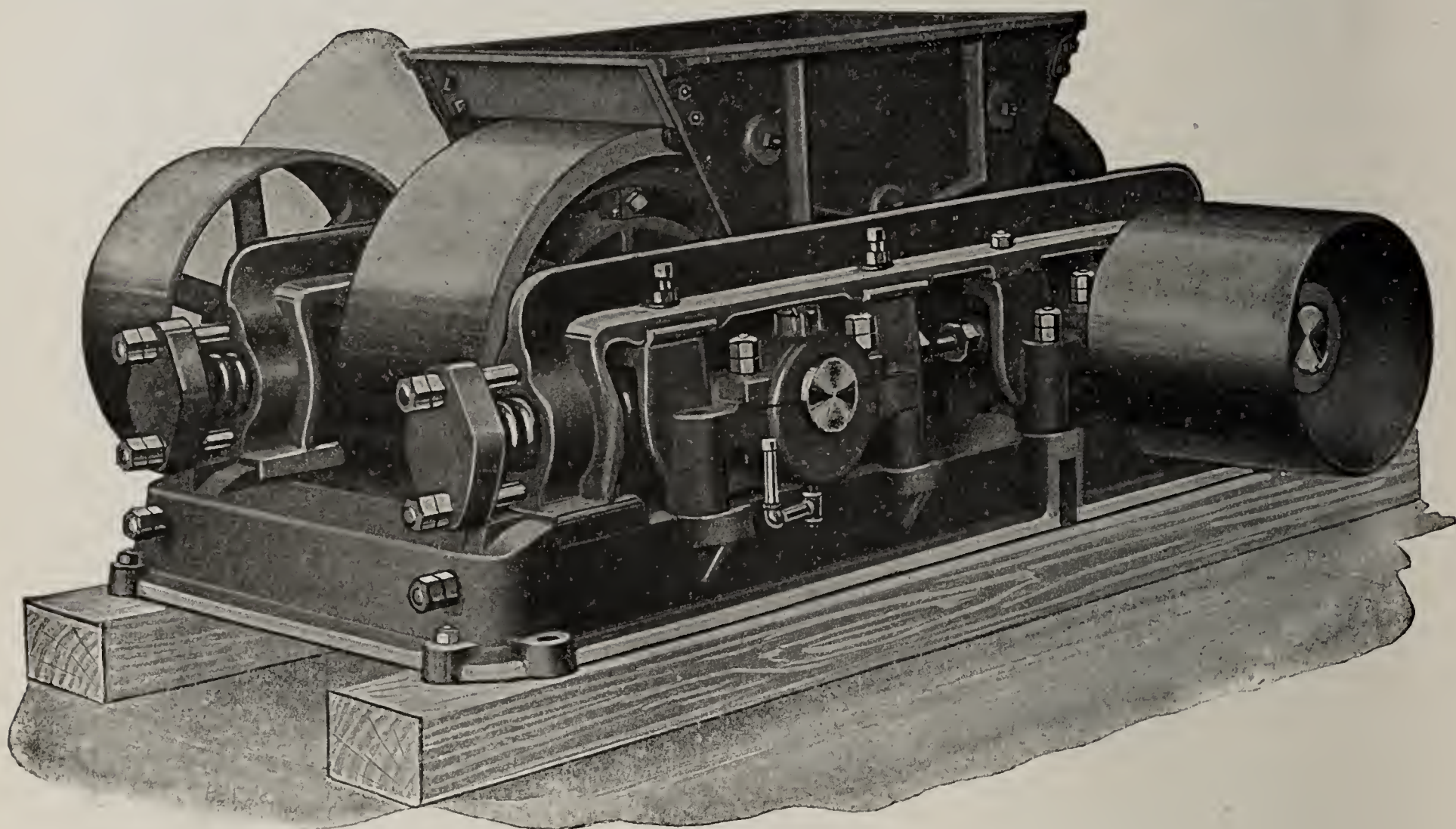
The General Refractories Co., of Pittsburg, Pa., manufacturer of fire brick, is enlarging its W. H. Wynn Works at West Decatur, proposing to make its daily output 70,000 brick.

THE JUSTICE CLAY CRUSHER.

The Manufacturers Equipment Co., Dayton, O., and the J. D. Fate Co., Plymouth, O., are introducing a new clay crusher to the trade. The accompanying illustration and general description will give the interested clay workers a fair idea of the construction and merits of this machine. The fundamental principle entering into the design and construction of this crusher is radically different from that found in other types of clay disintegrators and smooth roll crushers. In the "Justice clay crusher" the culminating point is the new principle employed.

The new principle is found in the fact that the rolls are of the same diameter, and also of a much larger diameter than found in the old type machines and further the rolls

nal bearings are cast separate from the base. The journals for the high-speed roll are permanently and rigidly bolted to the base by tongue and groove construction. The journal bearings for the slow-speed roll are free from the base but gibbed at top and bottom and backed by heavy steel coil springs, which requires 7,000 pounds pressure to each to start compression, thus preventing breakage in case some uncrushable substance gets into the crusher. The free journal bearings are independent of each other and either one may be sprung back without the other, preventing in this way all binding and dangerous strains on the base. Provision is made in the hopper so that its sides may be sprung back in case only one end of the roll should be sprung back at a time.



The New Justice Clay Crusher, Especially Adapted for Grinding Clay Containing Pebbles.

have comparatively narrow faces and are driven at high speeds with slight differential. This new principle has been thoroughly demonstrated and proven by tests, in many cases, to be greatly superior in crushing power to all old line crushers. This new and lately developed principle of high speed rolls with slight differential, narrow faces and large diameters has only recently become known as essential in clay crushers, though it has been employed in machines of this class used in other lines of work for a considerable time.

The Justice clay crusher is designed for grinding all drift or deposit clays and is admirably adapted for grinding clays of this character which contain small pebbles and fine gravel. This crusher will also successfully grind the tailings from dry pans where shale or fire clay is used and reduce same sufficiently fine to preclude any further screening. The design of this crusher embraces the highest degree of mechanical knowledge and ingenuity and the construction represents the greatest mechanical skill.

This crusher has a solid cast iron base of unusual weight and strength and that complete protection may be secured against breakage, heavy wrought steel bolts are used as tie-rods through each side of the base. All jour-

The hopper has a lining on each side which is made adjustable to the ends of the rolls thereby leaving the entire face of the rolls free for grinding purposes. This feature is absolutely new in clay crushers. The springs are subject to a compression of two inches allowing foreign substance of this size or smaller to pass through without injury to the crusher and larger pieces will not start through. All journal bearings are of the ring-oiling type, having two rings to each journal, large oil reservoir, convenient drain pipes and packed on ends to make dust proof. These journal bearings are 13 in. long, and their caps are removable without taking off upper tie bar. The shafts are $4\frac{3}{8}$ in. hot rolled and turned. A fly wheel is employed on the shaft of the high speed roll this increasing the momentum and giving an even distribution of power.

The rolls of this crusher have detachable tires which are renewable when worn. These tires are made from a special mixture of hard iron, heavily chilled, producing extraordinary wearing quality. Steel scrapers are provided on both rolls. The whole machine is mounted upon heavy timber skids, properly arranged for setting on foundation. This crusher is built in three sizes.



CONTRACTS TO BE LET TO LOWEST AND BEST BIDDERS.

The United States Circuit Court of Appeals, Sixth Circuit, says, in *United States, Etc., Co. vs. Sundmaker*, 186 Federal Reporter, 678, that laws which provide that public contracts shall be made with the lowest and best bidders, with or without the right on the part of the awarding officer or board to reject any and all bids, or which contain kindred provisions, are enacted for the benefit of property holders and taxpayers, and not for the benefit of, or to enrich bidders, and are to be executed with sole reference to the public interest.

The director, whose duties in awarding the contract in this case, which arose in Ohio, for certain paving, were not merely ministerial, but discretionary and deliberative, was not only vested with the power to reject any and all bids, but was required, acting solely for the public good, to determine who was the best as well as the lowest bidder. In determining these questions, the law cast on him the duty of considering the financial ability, the business judgment and capacity, the skill, responsibility, and reputation of the various bidders, and the quality of the materials proposed to be supplied. Inquiry, investigation, comparison, deliberation, and decision were necessarily involved.

The state court has declared the rule applicable to such a situation in *State vs. Board*, 81 Ohio St. 218, which was relied on by both parties, and which dealt with the statute under consideration in this case, and in *Ohio vs. Hermann*, 63 Ohio St. 440, which involved a statute which required the contract to be made with the lowest and best bidder. Both were suits in mandamus by unsuccessful bidders. Both of them, citing *State vs. Commissioners*, 36 Ohio St. 326, broadly announce that the rule is well settled that, where authority is given by statute to a board to let a contract to the lowest and best bidder, discretion is thereby conferred which the courts will not undertake to control.

The statutory provision authorizing the director to reject any and all bids was notice to intending bidders, and to the director himself, that by his call for sealed proposals he was not obliged to accept any bid that might be made, or to award a contract thereon, unless he deemed the bid the lowest and best and the bidder satisfactory, and further adjudged the acceptance of the bid and the execution of a contract in pursuance thereof to be for the best interests of the city.

The submission, by a reliable and responsible bidder, of the lowest bid for a contract for public work to an official whose duty it is under the statute to let the contract to the lowest and best bidder, but who has a right to reject any and all bids, of which fact the bidder is bound to take notice when and before his bid is submitted, does not constitute an agreement that the officer will make a contract with such bidder for the work; nor does it give the bidder such a right to the contract as will authorize a court of equity, at his instance, to compel the officer to enter into a contract for the work with him, when such officer is about to award or has awarded it to another bidder, even though he be higher.

SIZE OF DOWN DRAFT KILN.

One of our readers wrote us a letter inquiring as to the practicability of building a 40-ft. round down draft kiln, and whether there were any kilns of that size in Kansas, Nebraska or Iowa.

These inquiries have been referred to a prominent engineer and kiln expert, who answers them as follows:

"There is nothing revolutionary nor even startling in the size of a 40-ft., round down draft kiln. We do not know of any in Kansas, Nebraska or Iowa, but would be surprised if there were not some kilns approaching this size in those states. In northern Ohio we have some as large as 42 ft.

"A Canadian plant for years has been using 37-ft. kilns and in rebuilding the plant would consider no other size. The product is sewer pipe.

"A Southern Ohio plant has torn out a lot of 26-ft. kilns and is replacing them with 40-ft. kilns for sewer pipe."

PREVENTING BOILER SCALE.

A new treatment of boiler waters to prevent the formation of scale consists in allowing the water to run down an aluminum plate, provided with corrugations. It is necessary to keep the corrugations brushed free and clean of deposits. The theory covering the action of the process is that by the passage of the water over the aluminum, a current of electricity is induced, the water being negative and the aluminum positive, causing ionization of the scale-forming salts so that they do not take a crystalline form but become amorphous. At the same time, the aluminum, by the friction of the water, and the electrical action, is abraded from the surface as a colloid, which after a period undergoes change in the water. An investigation at Liverpool University showed that aluminum hydroxide was not present to a great extent in the water treated by the apparatus, but that the aluminum was in the water in colloidal form, mixed with hydroxide, and remained so for several days.

The apparatus must be exposed to light and air, and preferably to a north or south light, for best results. If closed entirely from air and light, it will become almost inoperative. Water treated by this process should be used within seven days or the effect is lost.

ANCIENT BRICK.

Samuel Howe, of New York City, is in possession of an interesting collection of photographs which were collected by Prof. Jackson, of Columbia University while on a trip abroad. These photographs, which have caused considerable attention and comment, were brought from the northern part of India, Afghanistan, Beluchistan and Persia and show specimens of brick, tile and terra cotta, both glazed and unglazed, which have been in use in those countries for many years. These specimens of brick are a revelation to the American brick manufacturer who has been resting contentedly in the belief that the product of his particular machinery was equal if not better than any other in existence.

BURNING QUESTIONS.

The burning question is one that is never entirely settled. Owing to the varying qualities of clay found at different places, and even in clays from various strata in the same mine; the various kinds of kiln systems and different methods of firing employed by each burner, as well as the large variety of fuels used, combine to make the burning of clay ware a never ending study.

Some of these perplexing problems have been presented to us for solution. Feeling our inability to cope with these serious difficulties, we have obtained the necessary information from various sources including the expert engineers of the American Clay Machinery Co.

A subscriber from Pennsylvania asks for information, as follows:

Please advise me if the analysis of a sample of clay as given below shows the clay to be of any commercial value.

Moisture	3.80
Silica	81.20
Alumina	13.30
Iron oxide .....	.80
Lime .....	.45
Magnesia .....	.13

This is answered as follows:

As to the commercial value of the clay, we are doubtful, for the reason that it contains such a high content of lime and magnesia with the iron oxide .80 and the lime oxide .45, it is probable that the lime would react on the iron, thereby fluxing the clay and reducing the range of vitrification, also with that content of lime in the material it would mean a possibility of scum and efflorescence, depending on the nature of the lime contained in the clay.

A clay manufacturer in Missouri asks for information as to cause of brick cracking and breaking.

I would like to inquire if the brick in a round down-draft kiln half-full is harder to burn than if it is filled to within 3 feet of the crown?

We have a large order for wire cut Persian brick 15 inches long by 4 inches wide and $2\frac{1}{2}$ inches thick. When we fill the kiln full all the bottom brick break.

We have just finished burning a kiln and have had difficulty in getting a temperature of cone .08 in the bottom of the kiln. All conditions were the same as when the kiln was filled to top.

This query is answered as follows:

The breaking of the bottom brick in the round down-draft kiln is evidently caused by the fact that the brick will not stand the weight, consequently this manufacturer should use a kiln with a lower crown. It is natural, of course, for heat to accumulate near the crown, especially when there is so much space between the top of the brick and the crown. In order to overcome this trouble, under the present conditions, it would be necessary to increase the draft, but in this case there would be a waste of fuel, and the most economical way of solving the problem is to lower the crown of the kiln.

One of our Connecticut brick manufacturing brethren asks for advice as follows:

We find after our brick are burned (we use the old fashioned scove kiln, some of the side walls of which we have made of solid brick, same as are used by so many firms in New Jersey, this saves putting up and taking down scoving every time the kiln is built) close to and some times three or four feet from each side of our kiln, it is particularly noticeable next to the brick wall, there are a great many brick that are extremely brittle so much so that they cannot be shipped at all. Throughout the balance of the kiln no such thing exists and the brick are good and hard.

Is there any way to alleviate this trouble?

Our clay is absolutely pure like a cake of cheese and we use a good quality of clean sand for making up the composition.

The following advice is given:

We believe the extreme brittleness of the brick close to the side of the kiln is caused by the thin walls of the kiln. This can be remedied by thickening these walls so that proper heat insulation is secured. Also it is very important in cases of this kind that the material be properly annealed or cooled, and that this process be not allowed

to take place too quickly. If the brick are cooled too fast they will undoubtedly become brittle.

The superintendent of a clay plant in North Carolina asks the question:

About how much on an average of coal and pine wood is used for burning 1,000 brick from 80 to 90 per cent "hard," in updraft kilns with the average burning clay?

This is answered as follows:

We find, from experience, that it requires from 900 to 2,000 pounds of coal per one thousand brick, depending largely upon the fireman, and how he handles his fires, and also the quality of coal used and also in addition to that, much depends upon the thickness of the walls of the kiln. If wood is used it requires from $\frac{1}{2}$ cord to $1\frac{3}{4}$ cords per thousand brick.

NEW INSULATED LINING BRICK.

A new insulating lining brick, designed for use where absolute freedom from dampness is necessary, is said to be so thoroughly waterproofed and burned that 45 per cent of the volume is confined air. Its specific gravity is only .090, although its ultimate strength in compression is claimed to be 750 pounds per square inch. The brick float in water and are said to be moisture proof.

HINTS ON SOLDERING.

To secure the best results in soldering it is, of course, necessary to do away with all corrosions and metallic oxides before applying a flux. The usual fluxes for soft soldering are resin, sal ammoniac, muriatic acid and hydrochloric acid. For the work which machinists have to do in occasional soldering of iron, steel, brass and copper the best flux is zinc chloride. Use the chemist's zinc chloride, which comes in anhydrous crystals, and dissolve it in alcohol, add a little glycerin to make it adhesive, and apply to the parts before soldering. The alcohol in the preparation lights when applied to the metal if the surface is hot enough, and in this way serves to indicate whether or not it has been fired sufficiently. The proportions in which the ingredients of this flux may be used vary according to individual taste, but the following will be found generally satisfactory:

Zinc chloride	5 parts
Alcohol	4 parts
Glycerine	1 part
Or this—	
Zinc chloride	2 parts
Glycerine	3 parts
Alcohol	5 parts
Glycerine	3 parts

ASKS FOR INFORMATION.

One of our Indiana subscribers writes us asking information as follows:

We use surface clay for the manufacture of building block and would like to learn of a cheap method of glazing one side of the block. Our clay will not salt-glaze by any methods we have tried and we would like to know if there is any method by which the block can be successfully glazed.

If any of our readers can give the desired information, we will be glad to publish same, as it is a subject of general interest to clayworkers.

A pottery kiln, of unknown age, has been discovered on a farm north of Pomona, Kan. The kiln was found when the men plowing in the field turned up a number of pieces of pottery. No pottery of value has been exhumed, most of the finds being small pieces, such as bowls and jars. The old kiln is thought to date far back of the time when the Sac and Fox Indians roamed over the ground. The earliest settlers who filed into that neighborhood when the land was first opened, remember no kiln being found there then, which gives rise to the belief that it was used by people of an earlier age.



CEMENT TILE PLANT PUT OUT OF BUSINESS.

The concrete competition is not so fearsome a thing when once it is faced squarely, without doubt or fear. This truth was evidenced, during the past year, by a case in Northwestern Ohio, which has come to our attention. In a certain town of that section, a clay tile plant was enjoying a good business and had reached the point of comfortable prosperity. This evidence of good business aroused the envy of some men in a neighboring town, who had money lying idle and they conceived the idea that it would be a good plan to start a competitive tile factory and decided that concrete tile would be the thing to manufacture, their means not being sufficient to enable them to erect a modern clay tile plant. They had about \$10,000 to put into the business.

When a certain clay tile man heard of this, he decided that if these men were so anxious to enter the tile business, he would give them a chance to invest their money profitably and he offered to sell them \$10,000 worth of stock in his own company. To show them that the offer was a fair one, he opened his books to them, allowing them to see just what the profits were. This fairness, however, had the opposite effect upon the "get rich quick" men and they decided to go it for themselves and take all the tile business away from the old established firm instead of joining with it. They, therefore, built a concrete tile plant and started in business with a great hurrah, one of their chief arguments with the farmers in their territory, being that the clay tile man had been making enormous profits at the expense of his customers and in attempting to prove this, they went to the extreme of disclosing publicly the facts regarding the clay tile business, which had been given to them in confidence.

This underhand action was the one thing which aroused the clay tile man to action and he proceeded at once on a campaign of education among the farmers, regarding the advantages of farm drainage and the respective merits of clay and cement tile. He knew that it was simply a question of impressing the truth upon the tile consumers of the territory and this he proceeded to do in the most energetic manner.

He engaged the best men he could find to canvass the territory thoroughly, calling upon all the farmers and ascertaining the exact condition of their drainage systems and as to when they would likely again be in the market for tile. He also, by this means, secured a complete and accurate list of all the possible consumers of tile in the entire territory, available for his sales effort. He carried on an energetic system of follow-up work by the use of this list, sending all the "prospects" convincing literature of various kinds, including copies of the well known booklet, "The Life of Portland Cement," which exposes fully the inferiority of cement tile.

The results of this campaign were entirely satisfactory during the first year of the campaign. The clay tile man sold more tile right in the town where the cement tile factory was located than he had ever sold there in any previous year. His sales throughout the territory doubled and the cement fellows, who had started off with such loud talking, closed their doors within a year and were not in operation during the past season. It is not likely

that any men, in that territory, will be likely to invest their surplus money in cement tile factories for some time to come.

HOW TO TILE LAND.

The Western Tile Drainage Bureau, of which Mr. C. B. Platt at Van Meter, Ia., is secretary, has just issued one of the most important tile drainage booklets ever prepared and it is now ready for circulation by members of the Drainage Bureau. The book is entitled: "How to Tile Land to Produce Big Crops" and underneath the title is a suggestive illustration, showing a row of corn stalks and a money bag at the bottom of each stalk and underground as a reason for this evidence of prosperity, a line of drain tile. The title page also makes the declaration, "Your Land Will Raise Fifty Per Cent More Corn." To carry out this argument, the book at once enters into a very complete discussion of tile drainage and is filled throughout with information of the utmost value to farmers, and is of a character which should promote the use of drain tile.

Among other things, the booklet says:

"The earth is covered with a thin layer called soil. This blanket, on which so much depends, is fertile, largely because of its porous nature and its ability to absorb and retain moisture, becoming enriched by means of organic substances carried in the moisture which it absorbs.

"The formation of this blanket has been the work of ages. Its loss would be the work of but a few years, after the protecting skin, the sod, is broken provided the life-giving agent water was not properly regulated by means of tile drains.

Science of Drainage.

"The regulation or disposition of the water or rainfall, so as to secure its full benefits and so as to avoid damage from an over supply or from a drouth is the "Science of Drainage."

"The drainage of agricultural land is accomplished by means of open ditches and surface collection into same and by the use of drain tile in deep ditches which empty or discharge into natural waterways or large open district ditches.

"The open ditch method of draining lands has nothing to recommend it. Drainage over the surface simply means loss.

"Drainage downward through the soil, or by means of tile drains, saves the washing off of soil on rolling lands and secures deep moisture storage.

"Open ditches can never be considered by the economical farmer. They should never be used excepting where it is necessary to construct an artificial waterway, or in the absence of large capacity natural waterways. Even in drainage districts where the ditch has large quantities of water to handle, the most careful consideration of cost of maintenance, loss of surface for cultivation, expense of crossings, the cutting up of tracts, etc., as compared to the large tile ditch, its expense and advantages, should be taken into account before installing open ditches.

"As a result of a force which is known as surface tension each particle of soil holds a film of water over its entire surface and thus provides a supply of moisture for the roots of the plant. When the quantity of water in the soil is so much greater than is required to supply that which is held by surface tension that the remaining space is filled, the soil is said to be saturated.

"Provided with a tile outlet, this surplus water, or water of saturation will pass off by force of gravity, leaving only the film of moisture which is held by surface tension and which furnishes the required moisture for plant growth.

"Fifteen to twenty per cent of all water which a soil will hold will not pass off by drainage but remains to contribute to the growth of the plants and to aid in the further preparation of additional plant food.

Theory of Drainage.

"If rainfall were regulated to meet the needs of growing crops, coming when needed and withheld when not needed, tile drainage would not be vitally necessary, though in such a condition there would still be great value in tile drainage in the preparation of the ground to facilitate cultivation, promote fertility and dispose of injurious ground or soil acids.

"When soil is saturated, that is, when water fills all the space between the particles, it contains no air and is unfit for the promotion of healthy plant growth. This water of saturation, acting under the force of gravity, will flow through the soil as soon as a portion of it is removed at the point of outlet into a tile drain. In this motion, or freeing of the space between the soil particles, a vacuum is created and the weight of the atmosphere on the surface of the soil forces air to follow the water as it flows out of the ground into the tile. In this action three laws of nature have been followed; first, the law of gravity, which causes the water to flow toward the tile; second, the law of surface tension, which holds the amount of required moisture around the soil particles and the law of atmospheric pressure which forces air into unoccupied spaces. Now this air which enters the soil following the water as it leaves the spaces between the soil particles, prevents the packing of the soil particles and thus retards the action of capillary attraction, which tends to bring the soil moisture to the surface where it evaporates in warm windy weather. It also leaves an open way for the plant roots to reach down to the soil moisture and plant food it contains.

"The breaking up of the surface pack or crust introduces air into the surface soil, holding the small particles from close contact, thus preventing capillary attraction or the drawing of the moisture from the subsoil to the surface, where it evaporates rapidly on a warm windy day. The stopping of evaporation means that the water which is held by the small particles of soil, and which contains the plant food, remains in place and the spaces between these film covered particles of soil, having been drained of surplus or harmful water by the action of a tile ditch, furnish a way for the plant root to penetrate to the lower or subsoil and reach the stored food contained in the moisture held around the soil particles by the force known as surface tension.

"Tile drained lands are always perfectly prepared for the process of plant food assimilation. Such lands have the greatest storage capacity for useful moisture; take up the full value of light rains during dry seasons and because of their open condition do not permit of rapid evaporation and provide ample air content for the growing plants. Tile lands are therefore much more able to successfully carry growing plants through a season of drouth than are untiled lands.

"Farmers do not always realize that growing plants require large quantities of air. It is always plentiful above ground but it is needed in the soil quite as much as water. Draining of land is done quite as much for the purpose of putting air in the soil as for removing the harmful water.

"When it becomes understood what an immense amount of water, which is estimated to be 36 tons per acre on warm windy days, is evaporated each day at the surface of the ground, it becomes clear that it is vitally important to prepare the subsoil by drainage to store all the moisture possible in available form for plant growth, and to conserve it during the cultivation period by frequent cultivations until such time as the crops shade the ground and preserve the open condition which prevents evaporation."

The Scandia (Kan.) Brick & Tile Co's. plant has been sold to a firm from Rockwell City, Ia., which will continue the business.

The Winnebago Drain Tile Co., of Winnebago, Minn., is installing a new tile machine. The company will also produce solid and hollow brick, hollow building block, and kindred products for which there is a good demand.

ENCOURAGING REPORT.

We are pleased to note the following encouraging statements in a recent communication from C. R. Madson, manager of the Algona (Ia.) Brick & Tile Co. He says:

"Notwithstanding the dry season that we have passed through in this part of the state, this has been the busiest year in the history of this company. While others in this part of the state have tried to see how many tile they could unload regardless of price, we have sold our entire output at our old price, and will be compelled to buy some to fill contracts.

"This week we sold the tile to be used in drain 61 Kosuth Co., a total 25,910 tile, one consent drain that will require 11,200, one private with 43,700, and two others, one 7,000 and the other 12,000, a grand total of 99,810 tile sold this week, which is not so bad for a two-kiln plant. Our business for 1911 will nearly double that of 1910."

DRAIN TILE NOTES.

The plant of the Webster City (Ia.) Brick & Tile Co. has been sold to Mr. B. H. Ward, of Minneapolis, Minn., president of the Acorn Brick & Tile Co., which owns a number of plants in Minnesota, including the large works at Glenville and Albert Lea. The company is reported to be worth millions and has been in the tile business for a number of years.

Tile business has picked up considerably, since the recent heavy rains and the indications are that tile plants will be kept busy until late in the fall. The Dows (Ia.) Brick & Tile Co. are reported to be shipping tile out at a lively rate and farmers in the vicinity are also hauling away large quantities.

The White Hall (Ill.) Drain Tile Co. are certainly enterprising. They operate an electric light plant which lights the city. They operate a heating plant, which heats the largest part of the business houses and dwellings. They also operate an electric line which hauls the clay to the works. White Hall is fortunate to have such boosters located there; in fact, the boosters have made White Hall.

The tile plant which has been operated at Hibbard, Ind., is being moved to Springfield. It being said that the quality of clay, at Hibbard, will not longer make the quality of tile required.

The Tama (Ia.) Brick & Tile Co. are reported to be enjoying a good business.

The W. E. Lyon Co., of Carthage, Ill., is erecting a clay storage shed, where clay will be stored for use during the winter months.

The work of installing the new brick and tile plant, at Belle Plaine, Ia., is going rapidly forward, and it is thought the plant will be ready for operation by the 1st of October. The plant will have a capacity of 100,000 brick per day and the company expect to employ over 100 men.

A serious accident was reported as having occurred at the plant of the National Drain Tile Co., at Streator, Ill., in August, when two men, Benjamin Hoffher and William Smedley, were caught by falling earth and severely injured.

The A. C. Ochs Brick & Tile Co., of Springfield, Minn., report the sale of twenty-five clay tile silos, during the past season. We are told that Mr. Ochs is just completing his handsome brick and tile residence, which is said to be a fine example of fireproof construction.

The Zumbrota Tile Co., of Zumbrota, Minn., had a display of its silo blocks at the recent Minnesota state fair, which attracted considerable attention.



TO FURTHER GOOD ROADS.

The cause of improved country highways finds its strongest ally in the American Road Builders' Association, with which is identified men prominent throughout the country in the good roads' cause, including many famous highway engineers and expert authorities. Mr. Harold Parker, chairman of the Massachusetts Highway Commission, is the president and E. L. Powers is secretary. The office of the secretary is 150 Nassau St., New York City.

While this Association has been organized for some time, it only recently secured a regular charter and widened its scope to its present importance. This Association represents the first organized effort to unite in a national body those identified with road building.

At a recent meeting of the Association, held in Chicago, a new constitution and by-laws were adopted and the membership of the board of directors increased to 24. The meeting, in fact, effected a complete reorganization of the Association.

We believe it is extremely important to the paving brick interests that they should identify themselves heartily and strongly with this Association, which promises to play such an important part in the great improved highway building of the future.

ENCOURAGING SIGNS OF THE TIMES.

The County Commissioners of Westmoreland County, Pennsylvania, have taken advantage of the provisions of the general road law of the state, that gives to counties the privilege of raising special funds, either by direct taxation or by issuing of bonds for the purpose of building county roads, the entire expense of which is borne by the county.

Under this provision the commissioners recently let contracts for four pieces of road in different parts of the county, aggregating a total of about twelve miles, and paving block were specified for all this work. These are the first contracts let for county roads in Westmoreland county, and it is good news not only to the paving brick manufacturers who are so situated as to be able to reach this district, but it is good news to all paving brick manufacturers throughout the country, as it shows progress made in the recognition of brick as the best paving material, and the adoption of brick in Westmoreland County, Pennsylvania, will have its influence on other counties that will soon follow its lead.

Allegheny County and Washington County, Pennsylvania, have been using more or less brick in the paving of their county highways and it is a very encouraging sign of the times.

The commissioners specified the block manufactured by the following companies for use on the highways above mentioned:

Mack Manufacturing Co., New Cumberland, W. Va.; Bolivar Face Brick Company, Bolivar, Pa.; Toronto Fire Clay Company, Toronto, Ohio, and the Globe Brick Company, New Cumberland, W. Va.

MISSIONARY WORK NEEDED IN KANSAS CITY.

There are certain cities throughout the country, which, owing to prejudice or as the result of some unpleasant experience, seem to be settled in their opposition to brick as a paving material. Where such is known to be the case, it would seem that those points should be the target for all paving brick men to shoot in all the "hot shots" possible to overcome the sentiment, and establish confidence in what we all know to be the best pavement in the world—brick.

Kansas City, Mo., seems to be one of these spots and our correspondent there advises us of the conditions, as follows:

"It is strange, but true, that Kansas City, which should have the cheapest and best brick paved streets in this country, being so well located to draw from the big Kansas field as well as from its own and outside Missouri plants, is still giving brick a black eye as a paving material. For several years the city engineer and board of public works have avoided brick as a paving material, but have tried all kinds of experiments with other paving.

"A few months ago they had a few jobs where they knew nothing but brick would stand the test, so they specified brick, with the 17 per cent test. This was the opportunity the paving brick people needed to show what a good brick pavement would do, as it has been shown so many times in other places, and the contractors should have made prices which would allow them the very best of brick to pave with. Instead of this they have been crying that they cannot find the brick that will pass the 17 per cent abrasion test, and they ask that the test be made 18 per cent, stating that the quality of brick seems to have deteriorated since the 17 per cent test was considered fair.

"This seems to be about the worst advertising that brick can have as a paving material. Manufacturers state that the quality of brick is now fully as good, if not better, than it ever has been before. They say that the long experience of the people operating the plants, together with the improved machinery which is constantly coming out, is bound to improve the quality of brick, other things being equal, and there is no reason why paving contractors cannot get all the good paving brick they need, if they will pay a reasonable price and not confine their buying to one plant.

"Of course it is admitted that some plants may not be able to turn out as good a quality of brick as formerly, owing to either a difference in the raw material or the methods of handling it, but there has been no deterioration in brick, as a paving material, and paving contractors are doing very wrong when they make such statements, as they will be used against brick in all parts of the country by those who are boosting other kinds of paving material."

FIRE DELAYS PAVING.

It is reported that the loss of the Los Angeles Pressed Brick Co.'s paving brick plant at Santa Monica, Cal., has been a serious matter to a number of street contractors in Los Angeles and vicinity, who were depending on that plant for their supplies. Some parts of their work have been delayed for several weeks. So far no definite announcement has been made by the company regarding its plans for the rebuilding of the plant.

A WAGON THAT WEARS.

The accompanying illustration shows one of the famous Martinsburg brick wagons in actual use, carrying a load of one thousand brick. This wagon is one of five purchased by the Adams, Payne & Gleaves Co., of Roanoke, Va., and the wagon shown has been in active use for the past five years. During that time the manufacturers have never been asked to expend one cent for repair nor have they been required to furnish any parts except a few axle boxes which were worn out. This appears to be a remarkable record for a wagon, which has been in active service for five years.

There is no question but what the Martinsburg wagon is the best on the market for the use of brick manufacturers and dealers in their local delivery service. It embodies all the requirements of the exacting service required of it and the fact that it has given entire satisfaction to a considerable number of brick manufacturers and

MANY IMPROVEMENTS ADDED.

We are informed that the General Refractories Co. has commenced work on the enlargement of the W. H. Wynn Works in Pennsylvania, and when the improvements are completed the plant will have a capacity of 70,000 a day. The company is also enlarging the Blair Silica Brick Works which, when completed about Nov. 1st, will have a capacity of 75,000 brick daily. The capacity of the Olive Hill plant is also being increased to 70,000 brick daily, and the company has started work on the erection of a new plant at E. K. Junction, Ky.

CHANCE FOR A GOOD ORDER.

A large selling agency in central Texas desires to place, at once, an order for 100,000 light-colored stiff-mud brick. Any parties who feel that they are in a position to bid on this work will please advise this office.



Martinsburg Brick Wagon, Loaded with 1,000 Brick, "Loads in Ten Minutes, Unloads in One and Never Chips a Brick."

dealers throughout the country is evidence of its superior qualities.

A well built, well taken care of delivery wagon is an advertisement for any firm but the particular value, of the Martinsburg wagon, is its durability and the ease with which it may be loaded, unloaded and handled in difficult places.

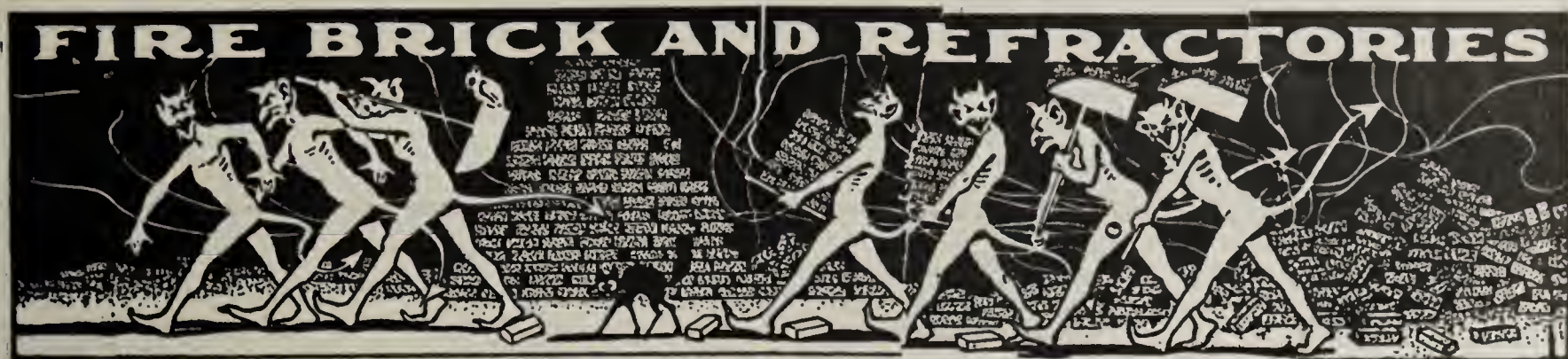
The manufacturers take a just pride in the quality of the material which they put into these wagons and spare no expense or trouble in making them the best brick wagons on the market. The dumping arrangement of the Martinsburg wagon is very simple and a load of brick can be deposited in good shape on the ground, in a minute's time. In fact, the slogan of the company regarding this wagon is, "It loads in ten minutes, unloads in one and never chips a brick."

The Youngsville Brick & Tile Co. has recently been organized at Lewis Run, Pa., with G. W. Foster as president and manager.

SPECIAL OFFER POPULAR.

Ten wide-awake clay manufacturers took advantage of the special offer which the Arnold-Creager Co. of New London, Ohio, made in our issue of October 1st. These companies took "time by the forelock" and by placing their orders now, secure a 10 per cent discount. By this co-operative arrangement both parties are equally benefited, as it enables the Arnold-Creager Co. to keep their plant running steadily and enables the clay manufacturer to have his machines ready for the spring rush with no danger of delay at a critical time of the year.

Following are the companies which have placed orders for spring delivery: Adams Bros. & Payne, Lynchburg, Va.; Western Brick Co., Danville, Ill.; M. D. Valentine & Bro., Woodbridge, N. J.; W. B. Davis Brick Co., Richmond, Va.; Pierpont Brick Works, Salem, Va.; Welch-Bright Co., Monaca, Pa.; New Brighton Fire Brick Co., New Brighton, Pa.; Excelsior Brick Co., Menominee, Wis.; Locksburg Brick Co., Locksburg, Ark., and the South Memphis Brick Co., South Memphis, Tenn.



THE DRY PRESS FOR MAKING FIRE BRICK.

The great value of the dry press for the manufacture of fire-brick is being demonstrated in many leading refractories plants throughout the country and the presses are coming more and more into use for this purpose. In investigating this subject, we consulted Prof. A. V. Bleininger, head of the department of ceramics of the University of Illinois, who writes us the following interesting letter, containing many ideas which should be of value to fire-brick manufacturers. Prof. Bleininger says:

"It is a well known fact that in many cases where fire-brick must withstand considerable loads at furnace temperatures, they should possess as great an initial strength as possible. This is extremely important in the case of brick used for gas benches and similar purposes. The work done at the Pittsburg Government Testing Laboratory has clearly shown, that brick which possess an open and porous structure were decidedly at a disadvantage in regard to its standing loads at these higher temperatures. Out of 26 brands it was found that the lowest crushing strength on end was 495 lbs. per sq. in. and the highest was 4,234.

"It is evident that these enormous variations in compression strength are due to indifferent methods of molding, in some cases too much water being used, and in others not enough. The highest compression strength obtained with these fire-brick was that of a dry press specimen. It also stood up most excellently in compression test at furnace temperature. It seems to the writer that more attention should be given by the manufacturers of fire-brick to dry pressing.

"It is evident, that by this method the maximum amount of clay is put into a cubic inch. For this reason such a brick will have the better of it over the 'slop-molded' brick at the very outset. It is bound to resist compressing strains far better than the latter. Dry pressing will also enable the manufacturer to reduce the amount of plastic clay to the minimum, since it is not necessary that a plastic bond be developed.

"Of course, a difficulty will be met inasmuch as the dry pressed brick are more friable in the green condition and hence more likely to be damaged. Again, a higher burning temperature is required for brick thus made. However, this would be no serious drawback, as one of the needs of the fire-brick industry is that the brick be generally burned at a higher temperature than is now customary on the average. Dry pressed fire-brick, burned at a higher temperature, will remain far more constant in volume, that is, they will show less shrinkage in the kiln or furnace wall than the brick made by the usual method.

Precautionary Measures.

"In the manufacture of dry pressed fire-brick, three conditions must be looked out for. First, the clays should be thoroughly mixed, ground and screened to a fineness certainly not coarser than a No. 10 mesh sieve. Second, the ground clay should be thoroughly and evenly moistened, so that the water will be distributed throughout the mass. Third, the clay should be pressed into brick in a strong press capable of exerting high pressure. It will be preferable to dry the brick on cars in a tunnel dryer, and

in burning them the water smoking should not be hastened as in the case of the 'slop-molded' brick. It is evident, of course, that dry pressing in any case must be restricted to standard shapes, which cannot be complicated. Larger and more intricate shapes must evidently be made by the method which is now employed.

"Where brick are to be subjected to abrasion or to slag action, dry pressed brick are not to be recommended."

Information from Another Authority.

The Fernholtz Brick Machinery Co. of St. Louis have also aided us in supplying material on this subject, and supplied us with the following article, which we publish in full:

The latest and perhaps the most interesting process of making fire-brick is the dry press process. Not many years ago a manufacturer of fire-brick who put in a dry-press was laughed at, but today there are few manufacturers of fire-brick who do not make a portion of their product by this process. This fact itself would indicate not only that a good refractory brick for many uses can be made by the dry-press process, but that users of fire-brick are demanding such a brick, or at least recognize its merits and are willing to accept it. It also indicates that the process is practicable and economical.

To those who have always made the soft-mud brick it seems impossible that a brick of the same materials could be made upon a dry-press. It is probably true that the dry-press process is used mostly for the making of brick not containing a large percentage of non-plastic material, though it is also true that this process is used for making brick with the highest content of non-plastic matter, such as flint clay, silica, magnesite, bauxite, chromite, etc. In fact, one company in this country makes a dry-press brick said to contain nothing but Missouri flint clay. How they produce the bond is not stated.

To make a high grade fire-brick by the dry-press process the plasticity of the soft clay should be developed to the utmost practicable degree. This is done either by weathering, by storing the freshly ground clay in a moist condition or by steaming the clay just before it goes to the press.

Weathering the Clay.

Weathering is practiced more or less by all manufacturers of fire-brick, not alone for the advantage it gives in the preparation of the clay, but for the advantage of having a stock of clay upon hand in case of accident to mines or trouble with miners. In place of this weathering or in addition to it, a preliminary preparation and storing of the clay in bins may be employed. This preparation consists of grinding the clay, steaming it and storing it in piles. The purpose of this preparation is not only to soften the coarse grains of plastic clay and, thereby increase its bonding power, but also to insure uniformity in moisture and the mixture of all parts of the vein of clay. This preliminary preparation is a help in any process of manufacture, but is especially valuable in the dry-press process.

The machinery needed for this preparation is a jaw-crusher dry-pan, elevator, steamer and conveyor. The clay from the mines is dumped upon a chute from which it is fed to a jaw-crusher. The work of this crusher, which

is generally of the "Blake" pattern, made by the Allis-Chalmers Co., is to reduce the large lumps to a size not exceeding about $2\frac{1}{2}$ in. in diameter, and thus do away with the laboring and expensive hand sledging. Such a crusher also, fed regularly largely increases the capacity of the dry-pan. The crusher should be set up high enough to discharge into the dry-pan by gravity. The dry-pan screen plates for this preliminary grinding should be coarse slots about 3-16 in. wide.

From the dry-pan the clay should be elevated to a sufficient height to permit of steaming and delivering to storage bins or rooms by a horizontal conveyor. This generally requires a bucket elevator 40 to 50 ft. high. The elevator discharges into a steamer, using exhaust steam. From the steamer the clay is conducted into a conveyor, that transports the material to the desired point and drops it into bins, if different mixtures are employed, or into a large room, if only one mixture is used. The clay, hot and moist, is piled 12 to 15 ft. high and allowed to sweat a month or more being using. The clay can be taken direct from these piles to the press, or if a finer product is desired, it can first be run through a disintegrator or impact pulverizer. From this pulverizer the clay is chuted and screened to a hopper over the press.

Steaming the Clay.

If a large quantity of hard, coarse, non-plastic clay is wanted in the brick, the clay can be steamed, just as it enters the hopper over the press. This in some cases has been found of advantage in fire-brick manufacture, though in face-brick manufacture, it was not successful and has been abandoned for the former method of preparation.

From the press the brick are placed upon spring trucks and immediately set into the kiln. Some have claimed that it was an advantage to dry the brick in a dryer before placing them in the kiln. In that case, the brick are placed upon cars, at the press, and dried in tunnel dryers. This method has been found to be damaging to face-brick on account of the greater liability of the brick to check and scum in the dryer than in the kiln as well as the injury to brick in transportation.

There may be some cases in fire-brick manufacture where the saving of time in the kiln may compensate for the expense of drying, but with most fire-clays and a kiln with a sufficient draft no dryer should be used.

The advantages of the dry-press process of making fire-brick are:

Economy in labor.

Brick of greater density, homogeneous in structure and perfect in form.

Greatest resistance to high temperatures and no changes of temperature in brick of a given composition.

The disadvantages of this process are:

Somewhat greater cost of equipment.

Greater cost of repairs to machinery.

Higher fuel consumption.

Brick have a low resistance to abrasion.

Cost of Equipment.

The difference in the cost of first class equipment of the different processes of machine-made brick is not large and should not determine the process to be employed. The dry-press, to be sure, costs more than any other machine used in brick manufacture, but this is more than offset by the saving in the cost of a dryer. Moreover, though no wet-pan or pug-mill is required by this process, yet where the best results are to be obtained, the cost of storage bins, steamer, conveyor and disintegrator is somewhat in excess of the clay-preparing machinery required in the other processes. On the other hand no represses

are required and no dryer cars. Assuming that it takes twenty-four hours longer to burn a kiln of dry-press brick, this would mean for a plant of larger capacity an additional kiln or two.

Cost of Manufacture.

The machinery used in the dry-press process is more largely automatic and requires less labor than the other processes. Moreover, the labor of repressing is saved.

The fuel required to burn dry-press brick is somewhat more than that required to burn brick by other processes, since the brick are more dense. Moreover, the bond being lighter, the brick must be burned harder costing a little more for fuel and labor. More time must be spent in burning, since the water smoking must proceed more slowly. The cost of repairs upon the dry-press is greater than upon the machinery used in the other processes. The repairs upon dryer, cars and track, however, nearly offset this.

Taking everything into consideration the dry-press process is considerably more economical than the soft-mud process and where repressing is done, is a little cheaper than the stiff-mud process.

The dry-press fire-brick by reason of its homogeneous structure and porous texture will stand a greater resistance to high temperatures and to repeated and sudden changes of temperature than brick made by any other processes of the same materials. Moreover, by reason of their perfect and uniform size they are often preferred for coarse work or where neat appearance is desired.

The dry-press brick being more absorptive are not so durable where they come in contact with water or with molten slags and gases. Moreover, dry-press brick are not suitable for places where they are subject to much abrasion.

The dry-press process in fire-brick manufacture has come to stay. Some will make a failure of it from lack of proper knowledge or equipment, but it has advantages that must be recognized by any impartial investigator. It should not be adopted by every fire-brick manufacturer, nor by any one exclusively, but there are many, besides those now employing the process, who could profit by it.

AMONG THE PENNSYLVANIANS.

We are advised that the Blue Ball brick plant in the vicinity of Williamsport, Pa., has recently been taken over by the General Refractories Co., which is operating a number of other plants. The plant was owned by W. H. Wynn & Co., Inc., and the new owners will make a number of improvements before it is operated to capacity.

Interests at Mt. Union, Pa., are holding out some excellent inducements in order to secure the location of the new fire brick plant which is to be erected by R. P. M. Davis, formerly associated with the Harbison-Walker Refractories Co. The Board of Education of Mt. Union has made it a matter of official record to exonerate the company from the payment of all school taxes for a period of fifteen years, while the city council has also taken action to suspend the collection of the Borough tax for a like period. The new company will start business with a capital stock of \$300,000 and no stock will be offered for sale to the public. Associated with Mr. Davis will be Wilson Kistler, P. P. Griffin, Rembrandt Peale, F. D. Halstead and C. V. Hackman.

Construction on this new plant will be started within 30 days. The first capacity will be 40,000 brick per diem, but this will be gradually increased until 80,000 will be made. The general management of the new plant will be under the direction of Mr. Halstead, it is said.



CONCRETE VS. VITRIFIED CLAY PIPE.

The following article by W. E. Dennison, which appeared in "Pacific Municipalities," can certainly be considered a fair and unprejudiced statement of facts, which should bear additional weight, from the fact, that Mr. Dennison is engaged in the manufacture of vitrified clay pipe and is also connected with interests engaged in concrete construction and he states:

"In all work coming under my personal control I use concrete wherever it seems best. I have had twelve years' experience in the manufacture of vitrified clay pipe and twenty-five years' in concrete construction. For the purpose of this article, which shall be a very brief and simple consideration of the question as to which is preferable for sewers, concrete pipe or vitrified clay pipe, two definitions are necessary.

"Concrete is a compound of gravel or broken rock and sand, united by means of hydraulic cement.

"Any substance to be vitrified must be converted wholly or externally into glass or a glassy substance.

"Concrete is strong or weak according to the amount of cement used and the manner of mixing the compound. After concrete has been made few can tell whether it is fit for the particular purpose or not. Time alone can render a true verdict. A concrete which is acceptable in foundations and walls in earth or in water or exposed wholly to the weather may be unfit where exposed to fire or acids. We do not think of baffling fire with concrete, but with brick of highly refractory clay burned in the hottest fires.

"Acid manufacturers do not use vessels of concrete in their processes. On the contrary their pipes and vessels, made to withstand the corrosive effects of acids and acid fumes, are almost invariably of glass or vitrified clay.

"Sewage, being composed of every waste capable of being carried off in solution contains acids not only of decomposition but the chemical refuse of the trades, the pipes carrying off this waste must be acid resistant to the highest degree. Consequently sanitary engineers reject wood and iron for sewers because both soon yield to decay due to acid reaction. Acid manufacturers test their pipes, jars and retorts by boiling fragments of their composition in the strongest nitric acid for days at a time. They find that thoroughly vitrified clay products stand this severest of tests and accordingly order their containers to be made of vitrified clay. You will not find them using cement pipes.

"For similar reasons sanitary engineers the world over use vitrified clay sewer pipe, because long experience has shown that it is perfectly adapted to the most exacting requirements.

"It is true that some engineers have allowed their enthusiasm for concrete, on account of its extreme convenience and the simplicity of its manufacture, to persuade them into recommending its employment in the form of pipes for carrying off sewage. Articles and pamphlets almost innumerable have been devoted to recounting the failure of concrete so used.

"Vitrified clay pipe has no need of defense if sound reason and experience are allowed to prevail. Its defects

are discernible to the simplest mind and are immediately discoverable on the job. Invoke the rule of rejections on the work and all defective pieces are immediately thrown out.

"The engineer or inspector has not yet been produced who can tell whether or not his concrete pipe will outlive the term of the bonds sold to pay for the work.

"In all work, whether public or private, the greatest economy is obtained by securing permanent results.

"We know what vitrified clay pipe has done for the permanent sanitation of the world's communities.

"We shall have to wait many more years to find that this office can be performed safely by cement concrete pipe.

"Concrete has its own places of usefulness and should be kept there. It is my sincere conviction, based upon observation and experience, that concrete pipe has no place in a permanent sewer."

COAST BUSINESS GOOD.

We are advised that notwithstanding the delay on the Oakland (Cal.) sewer job, the sewer pipe business is in very good shape there. San Francisco has recently let a number of new contracts, and quite a lot of orders are reported as coming in from outside towns. Oakland contractors have also been buying quite a lot of small pipe for private work. The town of Tracy, Cal., has called for bids on six miles of pipe, and the construction of a sewage disposal plant.

CANADA'S FIRST SEWER PIPE PLANT.

It is interesting to note the general interest which is taken in Canada in the opening of any new industrial plant. The opening of the Alberta Sewer Pipe Plant at East Calgary, Alberta, the first sewer pipe plant to be established in Canada, was made a gala occasion by the residents of that city. A large number of prominent officials and business men were present and a ceremony was performed by His Worship Mayor Mitchell.

NEWS OF OHIO PLANTS.

Reports are that the sewer pipe trade is more or less active in Ohio, depending upon the location of the plants. Those along the Ohio river are fairly active, while those in other parts of the state report the fall dullness to be expected at this season of the year.

MANY BIDS ASKED FOR.

Now that fall has come, there is a general rush to get sewer work done, before freezing weather comes on. However, bids are still being asked for by various cities. A sewer system is to be put in at Fairfield, Ia. Bushnell, Ill., has asked for bids for five blocks of sewers; Colonial Beach, Va., will construct three miles of 8-15 inch sewers; Auburn, Ala., will construct several sewers; Belvidere, Ill., will lay sewers in two streets; Edwardsville, Ill., will construct about 3,000 ft. of 8 to 15-in. sewers, and Newburgh, N. Y., will construct an 18-inch sewer, besides many other jobs which are to be let in various parts of the country.



GENERAL POTTERY NEWS.

W. B. Goucher, receiver for the American China Co., at Toronto, O., anticipates having that property running on very good time ere long, according to present report. The company is known to have had a large following among buyers of popular-priced goods, and when the receivership was decided upon, there was a very good volume of orders on the books.

Announcement has just been made by the auditor of Columbiana County, O., of the tentative assessed valuation of eighteen potteries in the East Liverpool district. The statement in its official form is herewith given for the first time:

Colonial Pottery Co., \$26,000; Trenle China Co., \$21,330; Goodwin Pottery Co., \$46,600; Harker Pottery Co., \$53,130; Knowles, Taylor & Knowles Co., \$185,830; Laughlin China Co. (East End plants), \$161,990; Potters Co-Operative Co., \$42,370; Smith-Phillips China Co., \$25,840; Thompson Pottery Co., \$54,900; Vodrey Pottery Co., \$12,270; West End Pottery Co., \$26,000; William Brunt Pottery Co., \$29,560; Hall China Co., \$20,850; D. E. McNicol Pottery Co., \$55,060; Croxall Pottery Co., \$10,130; Standard Pottery Co., \$67,560; Globe Pottery Co., \$25,730; Cartwright Bros. Pottery Co., \$23,900; Warker-Keffer China Co., \$23,200.

After several years' effort, the membership of the National Brotherhood of Operative Potters has agreed to increase the salaries of its president and secretary-treasurer. President Edward Menge, of East Liverpool, will be the first official to draw the new salary of \$1,800 per annum, this being increased from \$1,400.

C. B. and Walter Nordhoff with J. H. McKnight have formed the California China Products Co., and their new plant, which is about completed, will be located at National City, Cal., with a post office address at San Diego, Cal. This new concern will be the only one of its character on the Pacific Coast. It will manufacture hotel china and porcelain ware, sanitary porcelain specialties for plumbers' use, electric porcelain goods, wall tile and vitreous wall tile. The new office building and chemical laboratory have been completed. The main buildings will occupy a site 200 by 50 ft. It is planned to double the size of the plant within six months. One kiln has been completed and work on another 16-ft. kiln is progressing. Walter Nordhoff is president of the company, while his brother is secretary and treasurer. Mr. McKnight is vice-president and connected with the management of the property.

Electric porcelain manufacturers in the western district are bent upon increasing their kiln capacity. The R. Thomas & Sons Co., at East Liverpool, O., are adding another kiln, giving this plant a capacity of 10 kilns. At Lisbon, O., the same company operates another electric porcelain plant and a second new kiln is being built there. Since the formation of the so-called electric porcelain trust, a number of the independents have been increasing capacity, and their business appears to be increasing in an agreeable manner.

E. E. Bennett, a well known pottery decorating manager, has resigned his position as manager of the decorating department of the E. H. Sebring pottery at Sebring.

George Heisler, for many years in charge of the decorating department of the Warwick China Co., at Wheeling, is now manager of the western branch of B. F. Drakenfeld & Co., of New York, with offices in East Liverpool. It is a large pottery supply house.

At East Palestine, O., the Ohio China Co., is being operated under the direction of C. A. McIntosh, who succeeded O. C. Walker, the latter joining with the Sebring interests at Sebring, O. It was currently reported recently that the management of this plant was offered to Thomas Price, a part owner and manager of the American China Co., at Toronto. At the time he did not see his way clear to take the position because of his other business interests in Toronto.

The General Refractories Co., of Charleston, W. Va., with a capital stock of \$1,500,00 has been formed and it is authorized by its incorporation papers to operate a pottery. There are no potteries in the Charleston district, so this means the erection of another new plant.

Several East Liverpool parties have had the thought in mind to build a nine kiln plant at Parkersburg, W. Va., with a flint mill built as a part of the pottery plant. Plans have been drawn, but because of the business conditions of the country, construction has been held up for the time being. Joseph G. Lee, formerly with the Knowles, Taylor & Knowles Co., of East Liverpool, O., is said to be back of this new proposition.

Here and there, throughout the country, additions are being built to potteries. The manufacturers are of the opinion, so it appears, that, because of the rapid growth of the United States, there is need for expansion in the domestic pottery production. The importations of ware have fallen off from some foreign countries, while slight increases are noted from others.

J. E. Whittaker, formerly general manager of the Shenango China Co., of New Castle, Pa., has severed his connection with that company, and with several associates has formed the Keystone China Co., of Beaver Falls, Pa. Mr. Whittaker resides at New Castle. He has not announced what character of ware will be made in this new plant. The Shenango Company has been very successful in the manufacturing of underglaze hotel china-ware, and it is just possible that the new corporation will enter the same field.

A new warehouse, costing between \$4,000 and \$5,000, has been erected by the Star Pottery Co., at Crooksville, O.

C. W. Stine, of Zanesville, O., is considering the proposition to build a new pottery at Avondale in the Muskingum Valley ere long. This plant will be the first to be built in that section of the Zanesville territory.

The Colesburg Pottery Co., at Colesburg, Iowa, will enlarge its plant this season and will increase its production of flower pots.

John Swartz, a packer at the Taylor, Smith & Taylor Pottery at Chester, W. Va., has been granted a patent on a device that greatly facilitates the packing of ware in bulk carload shipments. A specially formed bin is used, and a western railroad contemplates taking over the patent rights, it is said.



NEW HYDRATING SYSTEM.

The following, which appeared in the "Monthly Bulletin," will no doubt prove of interest to our readers:

"The South Michigan Brick Co., of Kalamazoo, Mich., will be in operation very soon. This company is installing a system new to this country which will be of great interest to all sand lime manufacturers. It is a 'batch system,' and can properly be styled a 'quick hydrating system.'"

"A portion of the sand and the lime for the batch (the lime being finely-ground quick lime) is placed in a cylindrical hydrator and mixer, and sufficient moisture (water and steam) applied to make the hydration complete. Then the cylinder (which is power-driven) is revolved for about 20 minutes. Then the balance of sand is added, and the cylinder again revolved for about 40 minutes. The plan being to prepare enough material each hour to make about 2,500 brick.

"The contents of the cylinder are then emptied into a bin, where the material is fed to a continuous wet pan and ground and thoroughly mulled and mixed, and then sent to a storage-bin for feeding the press, this bin carrying a sufficiency of material so that it will remain in the bin for fully an hour before reaching the press.

"This means, that in less than 3 hours the material, including hydration, has been made into brick. This is "going some" when the previous method of siloing for 24 hours is compared with the new process.

"We understand that this process is in successful operation in Germany. The hydrating cylinder and the wet pan were both imported from Germany and to our knowledge, up to this time, no machines of this type have ever been made or used in this country."

SECURES GOOD ORDERS.

It is reported that the Golden Gate Brick Co., one of the leading manufacturers of sand-lime brick in the state of California, has secured a number of prominent jobs recently, including several large structures in San Francisco and public buildings in other parts of the state. A grammar school in San Joaquin valley will take about 250,000 of its brick, and the company will also furnish brick for new Masonic temples at Fresno and Willows, Cal.

WITHSTAND THE FLAMES.

"Sandstone Brick show remarkable tests and a building constructed of them is safe from fire. The interior may burn but the walls will stand and can be used again. A fine illustration of the fire resisting qualities of these brick is the ten story Monadnock Building in San Francisco, which stood in the direct path of the big fire. The walls of this building were practically uninjured and it was one of the first buildings occupied after the earthquake. Another smaller sandstone brick building which stood at Second and Mission Streets was called the "Oasis Building" after the fire, because it was the only building left standing in a devastated section where the heat was such that it is said to have melted the granite in adjoining buildings.

STEFAR BRICK TO BE MADE AT WINNIPEG.

We have been advised that the organization of the Manitoba White Granite Pressed Brick Co., Ltd., has been completed. At a meeting of the company held recently in Winnipeg directors were elected and L. F. Willan was appointed fiscal agent. He has successfully promoted companies in Vancouver, B. C.; Houston, Texas; Fort Smith, Arkansas; Kansas City, Kansas; San Antonio, Texas; Memphis, Tennessee; Jackson, Mississippi; Tampa, Florida; Tampico, Mexico, and many others under the Stefar system. The company is capitalized at \$125,000, issued in shares of \$1 each par value. Its purpose is to manufacture a brick equal in quality to any on the market, but at a much lower cost, and so dispense with the importation of brick at high prices. It is said that an average one hundred millions of brick are being imported every year from the United States to the city of Winnipeg.

TOURING THE EAST.

Mr. R. M. Bond, manager of the Bond Sandstone Brick Co., of Lake Helen, Fla., with his wife and little son are enjoying a vacation trip through the northern states. Mr. Bond, as usual, has brought along his touring car, and is enjoying a journey from Ohio to New York, from which place they will ship the machine to Jacksonville. Mr. Bond's company has been successful in the manufacture and sale of sand-lime brick from the beginning of its operations several years ago. The Bond Company has produced an excellent quality of brick in natural color, and in a beautiful buff. It has furnished millions of sand-lime brick throughout Florida and several of the largest buildings in the state have been built of this product. Mr. Bond is optimistic regarding the future of sand-lime brick, and is wide-awake, keeping his factory up-to-date and his product second to none.

EIGHTEEN-MOLD PRESS.

The American Clay Machinery Co., of Willoughby, O., are receiving congratulations for the excellent work being done upon their "rotary presses." Several years ago the American Company designed and constructed an eight-mold rotary sand-lime brick press. From the beginning of operations this press produced the highest quality of sand-lime and silica brick. The growth of the sand-lime brick business, and the demand for a larger capacity of high quality brick, made it necessary for the construction of a larger capacity press. The American Company in order to keep up with the growth of business decided to construct a press of larger capacity, and therefore, constructed their sixteen-mold press, weighing 45,500 lbs., and giving a capacity of approximately three thousand brick per hour. In the construction of this machine, the manufacturers have spared no expense in material and workmanship. The press is "built right and will run right."

The press can be seen under construction at the Willoughby factory of the American Clay Machinery Co., and a special invitation is given to all interested parties to inspect the workmanship, material and operation of the machine.

BRICK—IDEAL BUILDING MATERIAL.

Architecture has been defined as "The art which seeks to harmonize in a building the requirements of utility and of beauty."

Accepting this definition as a truism, the maker of brick will challenge every other building material to a comparison of merits as measured by this standard.

Brick—Its Utility.

Brick is fireproof, or as nearly so as a building material can be. In its manufacture it is submitted for several days to a white heat and therefore cannot be injured in any ordinary conflagration.

Brick—well-made brick—never has to be painted and never requires repairing.

Brick, possessing in the highest degree all these essential requirements of utility, is nevertheless one of the lowest cost building materials in existence.

Brick—Its Beauty.

Brick occupies a unique position among the materials available for the creation of beautiful buildings and this is especially true of the house. An analysis discloses the following interesting points:

Brick is made in small units—one hundred thousand of them show in the exterior walls of many modern buildings. This, together with the varying sizes which can be obtained, makes possible an almost infinite variety of form and pattern—thus giving full scope to the thought, ingenuity and skill of the designer and the workman.

Brick is also unique in the fact that it requires for its structural use a very considerable amount of material of another kind and color—the mortar joint. The mistaken idea has often prevailed that the mortar joint was a blemish and must be suppressed as much as possible or be colored to match the brick. The clever designer of today, however, seizes the opportunity afforded by the mortar joint to introduce into his wall another element of color and pattern.

"Texture" as applied to brickwork is as old as the brick wall itself. The very nature of the process of building a brick wall—the bonding together of a lot of small units—gives texture. Like the weaver at the loom, the brick-builder with his units of many colors and sizes weaves a fabric in burnt clay for the protection of mankind.

"Pattern work" is frequently used in brick walls to obtain certain architectural effects. Many of the best examples of brick architecture in England, Holland and Belgium are noted for their pattern work, as are some of the best examples of brick buildings in America.

Desired effects may be obtained in texture and pattern work with every kind of brick made, regardless of shape, size or color.

That brick—the material beautiful, durable and economical—is coming into its own in this country of ours is manifested on every hand.

That the architect is leading the way in this movement is shown by the rapidly increasing number of beautiful houses of brick—beautiful because of their texture or pattern work, their rugged honesty or sweet reasonableness.

The ultimate test of everything in this world is "Time." After centuries of competition from every other kind of building material that man has been able to discover or invent, brick stands today triumphant—the most useful, the most permanent, the most economical, the most beautiful.

It is often interesting to compare present methods of building construction with those which obtained in the

very early days of the country when timber was plentiful and when the appliances for doing the work were not to be compared with those which are now in current use. An idea of the way things were done by our ancestors is forcibly illustrated whenever one of the old buildings which has, perhaps, stood for a century or more is torn down to make room for the onward march of progress in the way of modern and pretentious improvements.

An excellent illustration of old-time construction is found in Ruthven Lodge, near Washington, D. C., which is being demolished, to make way for improvements now under way in that section.

The house was built sometime during the latter portion of the seventeenth century, and its demolition has brought to light many things of interest to architects and builders, while demonstrating in a most forcible manner that the art of building was exceedingly well understood and faithfully practised in this country more than two centuries ago.

The brick used in the house were of unusual shape and exceeding hardness, and whether they were made in this country or brought from England it is impossible to determine. Two centuries ago nails were hand forged, and, consequently, rather expensive, and few of them were found in this old mansion, though it was manifestly designed to be the home of people of wealth. Every beam was held in place by large wooden pins, a method which was regarded as excellent practice in those days.

The brick were so firmly set that in connection with the foundations, it was necessary to make use of dynamite in breaking up the walls.

EXPERT FAVORS BRICK.

After considerable controversy, the Board of Education of West Philadelphia, Pa., has decided to use brick for the construction of the new high school building to be erected there, which will be one of the largest and most expensive school buildings in the country.

The following letter from the eminent architect, Horace Trumbauer, which favors the use of brick, was sent to the president of the school board, in response to a request for his expert opinion:

Replying to your letter of September 8, 1911, I shall endeavor in the following to give you not only my own opinion, but that which is supported by the best professional practice.

First—I should say that the brick building with a limited use of limestone is as good a building as if it were built of granite, and in one very important consideration it is distinctly better, for it is an accepted fact that no building stone will stand as well under fire and water as do brick and terra cotta. This also applies to the second portion of your first query, but would add furthermore that the combination of granite and limestone trimmings would be most unfortunate from every point of view.

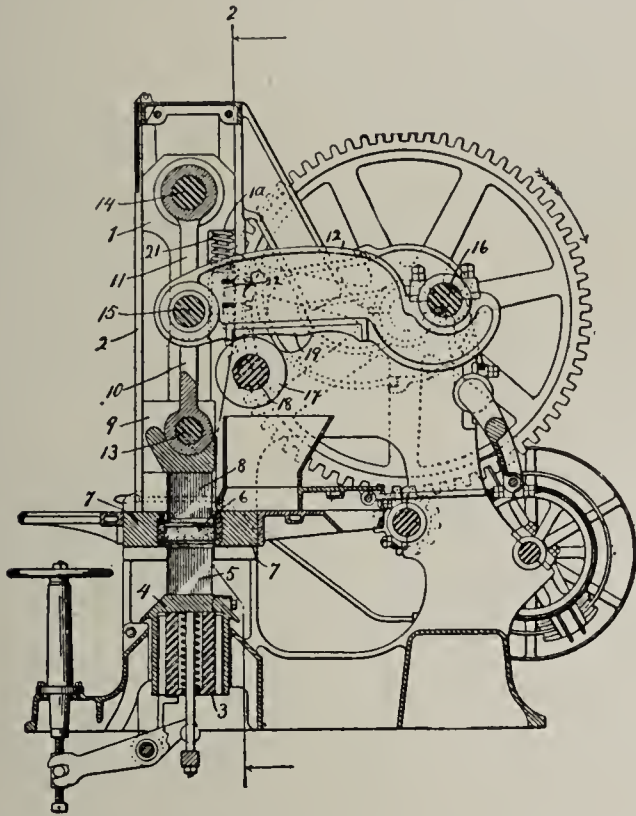
Second—It has been a source of gratification to me to note the use of brick and limestone in the more recent school buildings built by the Board of Education, and I will not hesitate to say that these materials strongly appeal to me as the most desirable ones to use.

FIRE-PROOF AND PANIC-PROOF.

The above should be synonymous words, as the very word, fireproof lends a note of assurance of safety tending to allay panics. A school building which is built with the above ever in view has been erected at Collinwood, O., to replace the school in which 175 children perished by fire, in 1908. The building cost \$85,000, is two stories high, and the walls above the stone foundation are of brick and terra cotta. Heat is furnished from a separate building and passes beneath the floors in brick ducts. Each room is provided with a direct exit.

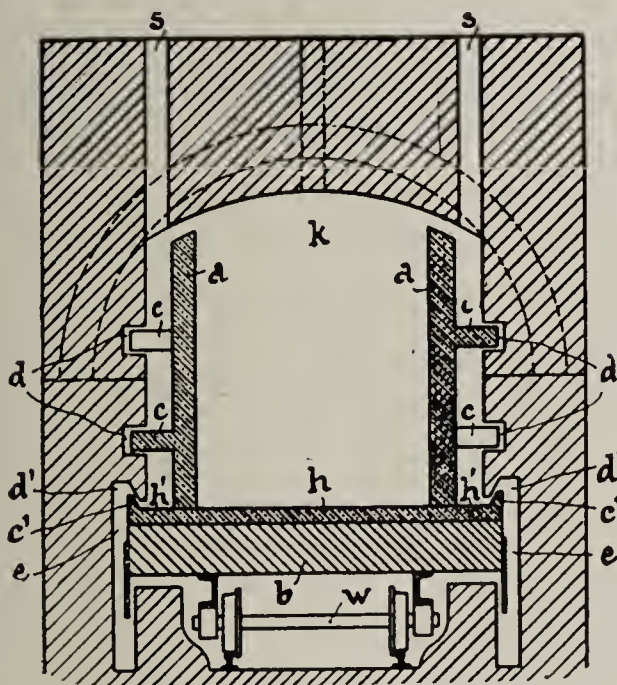
INVENTIONS OF INTEREST TO CLAY MANUFACTURERS

987,124—Brick-press. Harry J. Flood, Chicago, Ill. Filed Aug. 29, 1910. Serial No. 579,446. In a brick press the combination of a stationary frame, pressing mechanism comprising side bars, upper and lower crosshead and toggle members, said pressing mechanism being vertically movable in said frame, means for operating said pressing mechanism, and means for yieldingly supporting the same during a portion of the cycle of operation.



In a brick press the combination of a stationary frame, a mold therein, upper and lower plungers, upper and lower cross-heads, side bars, toggle members connected to the side bars and upper crosshead, a pitman lever connected to said toggle members, means for supporting said pitman lever during a portion of the cycle, and springs on the frame adapted to engage the side bars for supporting them during another portion of the cycle.

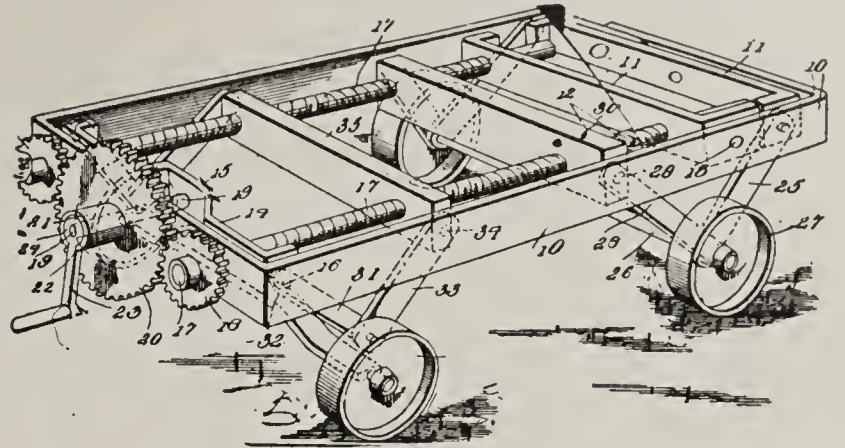
981,109—Continuous kiln with traveling hearth. Johann Rapold, Allswil, near Basel, Switzerland. Filed Oct. 17, 1907. Serial No. 397,943. In a furnace a traveling hearth, a plurality of



horizontal lateral projections thereon formed of ceramic material and disposed in several horizontal planes, continuous grooves in the walls of the furnace chamber to engage one of said projections on both sides of the hearth, and passages through the roof of the chamber through which fuel or other material can be fed on to said projections and reduced there to ashes so as to make a tight joint on the traveling hearth.

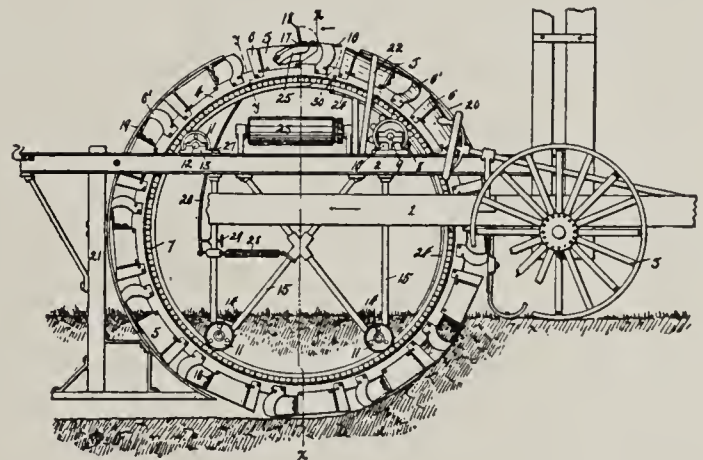
981,329—Elevating-truck. William H. Thornburg, East St. Louis, Ill. Filed April 9, 1910. Serial No. 554,567. An elevating truck including a frame, links hinged at the opposite ends of the frame, axles carried in the lower ends of the links, a pair

of shafts longitudinally journaled in the frame and having threads of opposite pitch upon their ends, traveling bars engaging in threaded relation over the ends of said shafts and adapted for longitudinal movement within the frame, traveling links hinged between the said axles and said traveling bars,



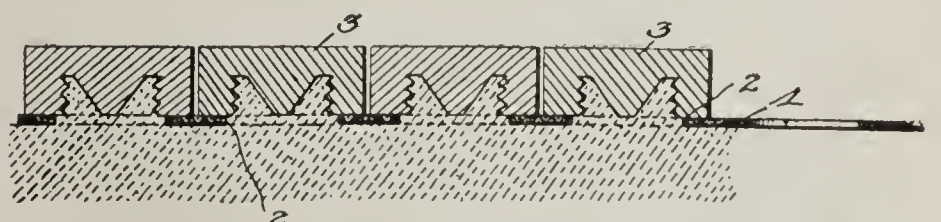
braces arranged in the opposite ends of the frame for supporting said shafts, the forward ends of said shafts extending through the frame, pinions rigidly carried upon the outer ends of the shafts, and an intermeshing gear-wheel arranged between the pinions for imparting rotation to the shafts.

983,959—Excavating-machine. Hiram Walters and Nathan Bumpus, Curtice, Ohio. Filed March 24, 1910. Serial No. 551,324. In an excavating machine, the combination with a rotary excavating wheel having a series of inwardly opening peripherally arranged buckets, of a gate hinged to the rear end of each bucket at its outer edge and adapted to have its opening and closing movements in the plane of rotation of the wheel, a wing projecting at an angle from the hinged end of each



gate and adapted to project substantially radially from the wheel when the attached gate is open and to project rearwardly from the associated bucket in substantially the arc of movement of its outer peripheral edge when the gate is closed, and means encircling portions of the wheel and co-operating with the bottom of a trench being dug to act on each gate wing to prevent an opening thereof except at a predetermined point in its revolution.

984,637—Backing for tiles. Felix Alcan, Scranton, Pa. Filed Jan. 10, 1910. Serial No. 537,303. The combination with a plurality of tiles spaced from each other each having a socket in its under side and a binding medium for securing the same in position, of a backing sheet therefor, said backing sheet



having a plurality of apertures therein arranged to align with the openings of the sockets to allow the entrance of the binding medium to the sockets in the tiles and intermediate strips to prevent the entrance of said binding medium to the spaces between the tiles.



Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers— Market Fluctuations and Industrial Prospects

NEWS FROM FAR AND NEAR.

The new engine which was recently installed at the clay plant at Zumbrota, Minn., enables the company to haul the clay to the plant much more speedily, doing away with the use of teams formerly used.

A plant is to be erected at Worcester, Mass., for the purpose of manufacturing terra cotta block by Oliver M. Dean. The factory will be 72x48 feet, two stories high, with a basement, and will be built entirely of terra cotta block. The building will cost in the neighborhood of \$10,000 and will probably be in operation about December 1st.

Reports from the Steubenville district, in Ohio, are that business interests in that section are holding their own at the present time. The fire clay industries are shipping large quantities of their product making it necessary, it is said, for the Pennsylvania Company to put on an additional train to get the product out.

A verdict has been rendered rewarding about \$10,000 to Chas. Burns for injuries received while employed by the North Iowa Brick & Tile Co., Mason City, Ia.

One of the new plants which has been established during the past summer is that of Frank R. Spulak at New Era, Ore. The product of the plant will be brick, tile, building block and fire proofing. The waste heat system will be used for drying and down-draft kilns for burning.

The Red River Valley Brick Corporation, Grand Forks, N. Dak., has shut down for the winter after a most successful season. The crew are now engaged in laying in the annual supply of wood. The company will fill the brick silo, which it built on the fair grounds which will not be reopened until the state fair begins next year. The company shipped approximately three million brick to Canada during the past season—550,000 being shipped to Moose Jaw.

At the fair at Grand Forks, N. Dak., the Dickinson Brick Co. exhibited as an attractive feature, a fire place constructed of fancy brick. The Hebron (N. D.) Brick Co. also had an attractive display of ware—an attractive feature being a chunk of Hebron clay weighing a ton.

We have been informed that Frank Hook, who has had charge of the Medicine Hat Clay Product Co., Alberta, Can., has purchased a large clay pit in that vicinity, and it is understood that he is contemplating the establishment of a factory there.

The Acme Co-operative Brick & Tile Co., known formerly as the Webster City Brick & Tile Co., Webster City, Ia., has filed articles of incorporation under the laws of the state of West Virginia. The new company is capitalized at \$500,000. Stock will be sold in this already successful concern, but it is the intention of the present owners to retain a majority of the stock. The plant is working over-time to keep up with the large number of orders coming in and it is the intention to increase the working force as fast as men can be obtained. Work on the new additional factory structures will be begun very soon.

We understand that Geo. P. Fackt of St. Louis is looking for a suitable factory site at Denver for the manufacture of terra cotta, which product is said to be in great demand in that part of the country.

We are informed that the great pottery manufacturing plant at Lincoln, Placer County, Calif., has recently constructed a large clay storage building costing \$25,000. This will be equipped with an elevated railroad traveling train and bucket line to be used in bringing clay from the mine.

R. Marcyes & Tuens, of Forsyth, Mont., have sold their brick plant, which has a daily capacity of 10,000 brick, to W. E. Dowlin.

Manager Wilhelm of the Boyne City (Mich.) Brick Co. has closed the plant for the season and will make an extended trip throughout the East, visiting many of the up-to-date plants, and on his return expects to install new machinery to increase the capacity of the plant three-fold.

The Hedges Brick yard near Cornwall, N. Y., was sold recently to James J. Dwyer and P. F. Gareaney. It is understood that the entire plant will be remodeled in the most modern up-to-date manner.

It is stated that the Brick & Tile Co. of Cloverdale, British Columbia, has found its clay deposit eminently satisfactory and the demand for its brick and tile has been such that the company is planning an extension of its works.

The Clay Product Co. of Wickliffe, Ky., has recently completed its new plant at Wickliffe. The product will be confined to tile and pottery. The officers of the company are: D. C. Tackert, president; M. H. Kam, secretary and treasurer, and J. Morphen, superintendent.

The Ashtabula Shale Brick Co. has recently been incorporated at Ashtabula, O., with a capital of \$150,000. The incorporators are: N. C. Ralph, John J. Koski, Charles V. Beckman, Frank W. Rose and Matt G. Spaulding.

The Bluff City Brick & Tile Co. has applied for a charter at Memphis, Tenn.; the capital is \$40,000. P. J. Lunati and others are interested.

The Granger Brick & Tile Co., located at Granger, Wash., contemplates numerous improvements including the construction of a continuous kiln and a 100-foot stack. W. T. Houlihan of the Seattle Builders Brick Co. is interested in this company.

For some time large quantities of clay have been shipped from Hawesville, Ky., to clay manufacturers in St. Louis, Louisville and Owensboro. The quality of this clay has attracted considerable attention in clay circles and prospects are good for the location of a large clay manufacturing establishment at that place.

The Bibb Brick Co. and the Bibb Sewer Pipe Co. of Macon, Ga., have opened sales-offices at 1610-1611 Candler Bldg., Atlanta, Ga. Mr. John Kelley will have charge of the offices.

We are told that the A. H. Strange Lumber Co. of Merrill, Wis., has had twelve large dry kilns constructed of solid brick, 21x72 ft. each, making a very complete and convenient drying system.

At a recent meeting of the stockholders of the Standard Lime & Brick Co. of Missoula, Mont., the following officers were elected for the ensuing year: President, W. H. Beacom; vice president, Allen J. Olson; secretary-treasurer and general manager, C. P. Garrison. The board of directors includes the above officers in addition to William Wayne and D. O. DeTar.

The three hundred employes of the Coffeyville Vitri-fied Brick & Tile Co. at Cherryvale, Kan., enjoyed a holiday on September 28th, in order that they might see and hear President Taft.

Mr. John Hosfeld, of Shippensburg, Pa., who recently purchased at public sale the brick plant of the Dillsburg Brick & Tile Co., has put a large force of men to work getting the plant in shape to begin the manufacture of brick. The plant was built four years ago at a cost of \$150,000, but has been idle for more than two years. Mr. Hosfeld is the president of the company; C. W. Harri-man, vice-president; J. W. Wetzel, secretary-treasurer and Wm. E. Westbrook, superintendent.

The Rossland Development Co., 326 Chamber of Commerce Bldg., Birmingham, Ala., of which Robert R. Zell

is president, has arranged with parties to install a plant at Rossland City to manufacture chinaaware, mosaic tiling and enameled brick. The company has purchased large deposits of kaolin in Marion County, Ala., which will be shipped to this plant.

Carl F. Kneisel, secretary of the Sheridan Press Brick & Tile Co., recently returned from a three weeks' trip through the East, during which time he visited many of the most progressive and successful brick plants in the United States. While Mr. Kneisel found the home plants compared favorably with the Eastern establishments, he learned many things of advantage to the local company, and as a direct result of this visit, the Sheridan Company plans improvements which will enable them to produce a brick greatly improved in quality and quantity from the past product.

The Holston Tile Co., near Rogersville, Tenn., has purchased twenty acres of clay land near its plant. The clay lays in strata from 8 to 10 feet deep.

The discovery of valuable deposits of clay on federal property in Australia, led the Government to establish a brick-making plant to manufacture the brick to be used in the new capital buildings to be built at Canberra, Australia.

We are advised that the Home Pressed Brick & Tile Co., of Oakland, Cal., has gone out of business.

The Hardstone Brick Co., Ltd., Winnipeg, Man., has been incorporated with a capital of \$500,000 to buy, sell and deal in timber limits, clay belts, mining rights, brick, and general building materials. The incorporators are: Frank Leitner, Eugene W. Peters and S. Hart Green, all of Winnipeg.

The Central Brick Co. has been incorporated at Barnegat, N. J., for \$150,000 by S. G. Davis, J. T. Lovett of Barnegat and others.

The entire plant and equipment of the Trunk Brick Yard at Freeport, Ill., was destroyed by fire September 20th. It is believed the fire was incendiary. A large amount of valuable machinery was destroyed.

The What Cheer Clay Product Co., What Cheer, Ia., has been incorporated, in Maine, for \$500,000. L. J. Coleman is president.

S. G. Johnson, of Huntington, W. Va., has purchased the interest of W. S. Spencer in the Barbourville Clay Manufacturing Co., Barbourville, W. Va.

R. G. Goodwin and Taylor Estes are building a plant for the manufacture of brick and drain tile at Lebanon, Ky.

It is rumored that Mr. Martin, of Montpelier, Ind., contemplates enlarging his tile factory, next spring.

The Bloomfield Brick Co., of Bloomfield, Ind., has filed a notice of the issuance of \$40,000 preferred stock.

We have been informed that the Central Brick Co. of Barnegat, N. J., will erect a plant at Waretown Junction near Barnegat for the purpose of manufacturing face brick, hollow block, repress, dry pressed and wire-cut brick.

The company is capitalized at \$150,000.00 and will erect a complete modern up-to-date plant equipped with the best there is on the market in the machinery line. The waste heat system of drying will be used. The officers of the company are: J. T. Lovett, president, and W. H. Spangler, secretary-treasurer.

The Wehinger Brothers, of Ottawa, O., who own and operate three other plants, and who are experienced in the development of shale deposits, have acquired 23 acres of land known as the Augustine. It is understood that the firm will build a seven-kiln plant which will be able to turn out five carloads, or 200,000 brick a day.

INTERESTING TIMES IN THE EAST.

New York, Oct. 12.—With every brick plant on the Hudson river closed for the year, the demand in the Metropolitan district about one-third of normal at this date, but with prices scheduled to advance until a \$7.00 level has been reached, the industry is inclined to "stand pat" and await results.

So far the outlook for the manufacturers is not very bright for dividends. The only hope lies in the ability of the Greater New York Brick Co. to maintain a constant demand, at levels ranging from \$6.50 to \$7.00 a

thousand. Until a week ago, this seemed possible of accomplishment, but during the last ten days other conditions have arisen affecting building conditions in Manhattan which may result in six and a half being top winter price.

One of these developments was the concerted action of lending companies, such as the Metropolitan Life Insurance Co., the New York Life Insurance Co., the Equitable Life Assurance Society, the Title Insurance Co., the Title Guarantee & Trust Co. and Frederick A. Snow, the city's largest private lender, to stop practically all new building loans until the present over-supply of rentable space in Manhattan has been taken care of. Another cause for the changed conditions in the local brick market is the fearful price war being waged by the cement interests, here in the East, which is putting Portland cement in the hands of consumers at prices lower than natural cement can be bought, and this advantage over an apparently inflated common brick price, is stimulating the demand for cement where brick normally would be used.

The only apparent off-set to this falling away in the demand for common brick where concrete can be bought and used cheaper under present conditions, is the wonderfully impressive lesson of the instability of concrete as shown in the collapse of the dam at Austin, Pa., and in the Hatfield and Black River districts in Wisconsin and in recent failures of concrete structures in and about New York. The fear is spreading among architects and builders, that perhaps the manufacturers of Portland cement are trying to recover some of their losses by foisting inferior cement on the market when competition has forced the actual price at mill below the cost of manufacture. Upon this fact the brick people of the east are basing their hope of holding their own in the face of New Jersey, Connecticut and Independent competition and an almost complete cornering of the brick market by speculative dealers in this city.

Within a short time the old historic Madison Square Garden will be razed and millions of second hand brick will be thrown upon the market to augment the tremendous supply now being absorbed at stiff prices. While this is a future ramification of the brick market conditions, it nevertheless has its bearing upon the winter and early spring prospects of the brick sellers here to control the prices they have determined to quote.

Year's Output Far Below Normal.

While it is of course too early to give a definite figure regarding the year's output of common brick, in the Hudson river district, it is entirely probable that the formal count that is usually sent to the State Museum, sometime in February, will show that this year's output was about 400,000,000 less than last year's output, which was 1,102,265,000, according to D. H. Newland, in his annual report to Dr. John M. Clarke, director of the State Museum. This gives the inference that the manufacturers have decided to resort to the tactics adopted after the 1907 overproduction when only 800,000,000 brick were made. It might therefore be stated that the 1911 output will range from 800,000,000 to 900,000,000 brick.

The average price obtained for this commodity last year, according to Mr. Newland was \$4.54 a thousand, the lowest average in any recent year and represented a decrease of 74 cents from the average of 1909. The prices ranged from about \$5.00 in 1910, to below \$4.00 in the late fall and winter. This year, the average price will be somewhere around \$5.50 with fluctuations from \$5.00 on January 28 to \$6.37½ on October 7. Last year was an unprofitable one and I know of no manufacturer in the entire district who declared a dividend for 1910 and I do not know of one that will declare one this year. The only bright spot in the outlook is the apparent ability of the Greater New York Brick Co. to make good and guarantee profits to the manufacturers.

Some Burdens the Brick Makers Have to Bear.

The Hudson river brick makers are in a position to make a handsome profit on their brick next year. There are about 450,000,000 brick on hand now, or practically half a year's supply. Unlike the 400,000,000 brick on hand a year ago next month, the present reserve is controlled by an organization that should be strong, but isn't. The reason it is not the potent factor in the local field that it should be and could be, is because the officials and directors have permitted all kinds of reports and suspicions to gain circulation regarding its purposes without deigning to heed them. In other words, the one apparent requirement to make this new selling company effective

is to take the public into its confidence, fully and completely. In this way very serious consequences may be avoided, if this tactic is adopted in time.

The Greater New York Brick Co. is, in a sense, a public utility company, supplying a building necessity. The purchasing public has a right to know why prices are raised and lowered, if such action is not dictated by demand. This confidential intercourse should not be spasmodic, but it should be regular, not through the public prints, but through the natural channels that reach the brick manufacturer, the brick distributor and the brick consumer.

Under present conditions, the manufacturers up the river are pinning their faith upon a "Moses" that is buffeted about by public conjecture and suspicion. In consequence the dealers distrust the Company's purpose, or those who are not directly affiliated with it do, while those who are affiliated with it clandestinely are suspected by builders and architects who think they are on the inside and are a party to a plan to inflate market prices. The Greater New York Brick Co. will do well to give a list of the dealers who are associated with it in the distribution of brick, for its own good.

In other words, the present is no time to try arbitrary tactics if the present market is to be sustained during the winter and both the independents and the members of the Greater New York Brick Co. should know it, if they do not now realize the trend of conditions in this center.

There Is Still Room for Optimism.

It is not my intention to alarm the manufacturers of the East by pessimistic statements, but they are entitled to know the exact conditions in the market to which they are shipping their product. It is due the distributors whether they be independent agents or a distributing company that the true facts be known at sources of supply so that they will understand why brick is not in demand or why more shipments are needed.

The sources of consumption of common brick for the next month and a half will be from the suburbs of New York, where speculative construction is still going on apace. Most of the large Manhattan work is now well contracted for as far as common brick is concerned. It is not probable that more than \$6.50 will be obtained during November and the remainder of October because some Connecticut competition is already in the market even at present prices. All the common brick now stacked in the dealers' yards should be taken care of by the first of December when some idea of the winter requirements will be obtainable.

The manufacturers up the river and those in New Jersey are in a position to meet any requirement, whether it be early frost or an extension of the existing lockout in the marble and stone cutting trades to brick layers because they have been shipping brick into the market so liberally of late that they will have no trouble in making their covered reserves before navigation closes. In reference to the lockout of the marble and stone men, no apprehension is seriously entertained of an extension of these labor troubles, because there are too many idle building craftsmen now to make their contentions enforceable, but it is a possible factor that should not be overlooked.

On the whole the common brick situation requires good management. The front brick market is without feature and prices are steady and the architectural and fireproofing terra cotta companies are exceptionally busy considering the general condition of business throughout the country.

PACIFIC COAST NEWS.

San Francisco, Sept. 25, 1911.—Notwithstanding an apparent lull in building operations last month, the record of new work undertaken showed considerable activity, and for the last few weeks there has been a steady increase in the number of contracts let. While few of the jobs are of unusually large proportions, it is observed that buildings of a medium size, in which brick is extensively used, predominate.

Several buildings of really large size have been planned, and will probably be erected during the fall, one of the principal ones being a large office building for the Standard Oil Co. The management of the St. Francis Hotel is also consulting with its architects regarding the proposed new wing at the corner of Powell and Post streets,

and it has been practically decided to go ahead with the work without further delay.

Lodge, club and ecclesiastical buildings have been a feature of more than usual importance for several months, and a great deal of additional work is promised along this line, both in San Francisco and in the smaller towns of the state. Plans will also be drawn shortly for a new high school in this city. Plans for brick residences in San Francisco and the suburbs are increasingly numerous.

Work is to be started on the Panama-Pacific Exposition grounds somewhat earlier than was generally supposed. President Taft will break ground for the Exposition in October, and the laying of foundations will soon follow. An architectural commission has been named to consult with the Exposition Company, and a council consisting of Willis Polk, Clarence Ward and W. B. Faville, prominent architects of this city, has been appointed to supervise the plans. Aside from the permanent buildings to be erected, the Exposition grounds will require extensive improvements in the way of drainage, sewers, etc., all of which will furnish work for the clay factories.

A matter of general satisfaction is the signing of an agreement by the union bricklayers, under which conditions of work are to remain as at present until after the Exposition. This action has effectively set at rest any anxiety over the possibility of labor troubles during the rushing times which are expected.

The demand for common brick has picked up a little in the last few weeks, and the market is in as good condition as at any time during the year, with every prospect of continued firmness. Some of the plants around the Bay are producing on a little larger scale than before, but many building contractors are still placing orders for future requirements, and the output is little, if at all in excess of the current demand. If there should be any surplus accumulation at the end of the year, it is believed that an outlet can be found for it without causing any depression in the local market.

There is an active and growing demand for brick in the California oil fields, as indicated by the successful operation and growth of several plants in that district for the last year. The situation is favorable for the industry, as there is a large amount of building in progress, lumber is scarce and high, and fuel plentiful.

It is announced that the California Unit Brick & Tile Co. with F. M. Sawyer as manager, will establish a factory for the manufacture of roofing tile, near San Diego, Cal.

J. A. Benson and J. Burness of El Centro, Cal., are arranging to open new brick yards at Blythe and Rannels, in the Imperial Valley district.

E. C. Kniffen, who has operated a brickyard at McKittrick, Cal., for some time past, has sold out to William Medd, a bricklaying contractor.

The Standard Brick Co. has been incorporated at Stockton, Cal., with a capital stock of \$300,000, by Walter King, R. R. Fowler, T. A. Jordan and S. S. Owings. The company intends to start a new pressed brick plant in Calaveras county.

The Columbia Clay Co. has been incorporated at Seattle, Wash., with a capital stock of \$50,000, by Geo. Bidle, Geo. Spirk and W. Baer.

J. P. DeGessen, whose brick project near Bandon, Ore., was mentioned last month, has demonstrated by experiments during the last few years that his raw material is suitable for fire brick, which has formerly been brought into the Coos Bay district at considerable expense. Mr. Degessen has been at Portland, Ore., for the last few weeks, and expects to get financial backing for the installation of a plant.

One of the finest school buildings in this city will be the new Girls' High School, to replace the building destroyed in 1906. The contracts were let a few weeks ago, and it is announced that the pressed brick and terra cotta for facing will be supplied by the Steiger Terra Cotta & Pottery Co., of this city. This company is well satisfied with its summer run, and anticipates a rapid increase of business in the next few months.

N. Clark & Sons, have furnished material for a number of fine churches of late, and have just closed a contract for pressed brick and architectural terra cotta for the new St. Ignatius Church on Fulton street, which will be one of the most imposing edifices in the city. C. J. Devlin

is the architect. N. Clark & Sons' plant at Alameda, Cal., has been in full operation all summer, and with a number of large jobs pending they are preparing for a very busy fall season.

N. W. Stern, of the Richmond Brick Co., of this city, has been touring southern California in his automobile, accompanied by a number of friends.

The Remillard Brick Co., operating a number of common brick plants around the Bay, is having a very busy season, and is shipping considerable material to San Francisco as well as to outside points. The plant at Pleasanton, Cal., has had a capacity run all summer, and is expected to reach an output of twelve millions for the year, before closing down for the winter. This company has reached a settlement with its former superintendent, E. H. Horton, who some time ago brought suit for commissions, etc., alleged to be due.

The California Clay Manufacturing Co., of Los Angeles, has called a meeting of stockholders for November 25, to take action on the matter of reducing the capital stock from \$230,000 to \$23,400.

The Carnegie Brick Co.'s large plant near Black Diamond, Cal., which has furnished materials for many important buildings in this part of the state, and for the last few years has been operated for the creditors of the California Safety Deposit & Trust Co., has been closed. There has been some talk of the plant being sold, but nothing definite can be learned regarding the intention of those in control.

The Long Beach, Cal., brick plant of J. Y. Parker has been closed for the season after a busy summer, during which a large surplus has been piled in the yard.

The United Materials Co., representing the Los Angeles Pressed Brick Co. and the Port Costa Brick Works, in this city, reports a material increase of business this month, the principal contract being for about 1,250,000 brick for facing the Southern Pacific Railroad's new station at Sixteenth street, Oakland. This company is also selling a large amount of material for various government works about the bay.

We glean from a western newspaper that the Pacific Tile & Terra Cotta Co., of Los Angeles, will expend a quarter of a million dollars in the development of white clay deposits in the Silver Lake district of the Mojave desert. The clay is to be shipped to Los Angeles for use in the manufacture of the articles turned out by the company. The deposit is located on 160 acres. Automobiles will be used to haul the clay from the mines to the Tonopah & Tidewater Railroad, seven miles distant.

THE SUNNY SOUTHLAND.

C. W. Able and R. H. Ethbridge have gone into the brick manufacturing business, having established a plant at Saluda, S. C.

The United States Government has ordered from fifteen to twenty car loads of brick from a firm at Selma, Ala., to be used in constructing an addition to the Federal prison at Atlanta, Ga.

A \$53,000 residence will be constructed at Atlanta, Ga., of hollow tile and face brick for G. W. Adair.

The Clark Pressed Brick Co., of Little Rock, Ark., has filed a petition asking a rehearing on the freight rate question and requesting the restoration of the former rate of 2 cents.

A company has been formed and land has been purchased at Gadsden, Ala., for the purpose of establishing a brick plant.

It is reported that the E. N. Jelks Brick Co., of Macon, Ga., are placing some very large orders in Tampa, Fla., and the surrounding country.

The National Mosaic Tile Works, of Mobile, Ala., has secured the contract for the tiling to be laid in the West Tennessee Normal school building at Memphis, Tenn., amounting to 60,000 tile. The company's tiling has also been specified for the state capitol at Raleigh, N. C.

MARYLAND.

Mr. A. S. Goldsborough has been appointed secretary of the Factory Site Commission of Baltimore, Maryland, at a salary of \$2,500 a year. This commission will begin an active campaign for a "Greater Baltimore." Many

building projects are on foot in Baltimore, among the proposed buildings are a number of large structures to be constructed of brick. A movement is also being urged for the erection of a huge manufacturers' building in Baltimore, where all manufacturers would have an opportunity to display their products.

KANSAS CITY AND THE SOUTHWEST.

Kansas City, Mo., Sept. 27.—There has been a considerable increase in the demand for both common and face brick in this city during the past month, and some stiffening has been noted in the prices of common brick. Some companies are absolutely refusing to continue to sell brick at cost, or below, stating that they would shut down their plants before they would continue such a practice.

Building operations seem to be on the increase here, and there is no reason why there should not be a season of considerable length, as the fall is the best time of year for building operations in this section, and the winters are usually mild enough so work can progress at least three-fourths of the time, and all the time if contractors use good judgment in getting their houses inclosed in good weather, so inside work is at hand for the cold and stormy days.

The report comes from Kansas that several of the brick plants which have been depending upon gas for fuel, in the past, have changed from that fuel to oil. While this makes an advance in cost of production, as compared with the old gas prices, they are not going to be able to get gas much longer at the old prices, unless they are fortunate enough to own their own gas wells.

Oil is proving itself to be a very satisfactory fuel for burning by those who have been using it long enough to give it a thorough test, and it is a fuel the manufacturer can get in the winter as well as the summer months, as the supply is greater when most oil is being refined. Gas, on the other hand, is scarce in the winter, if the regular gas companies are depended upon for the supply, as they have customers at that time who pay a higher rate for the fuel than the brick plant can afford.

C. C. Carroll, of the Midland Brick Plant, of Peru, Kan., states that his plant has been fitted with oil burners, and that they will no longer depend upon gas as a fuel.

S. Robbins, who has a pottery plant in Winnsboro, Tex., is to establish a like plant at Greenville, Tex. The site has already been secured and work of construction is soon to begin.

The following officers have been elected by the American Vitriified Brick Co., of Caney, Kan.: O. A. Ketner, president; John D. Paul, vice-president; E. N. Gause, secretary and general manager; J. D. Canary, treasurer.

The Lockesburg Brick Mfg. Co., of Lockesburg, Ark., in which T. J. Williams and A. N. Davidson are interested, is building a plant to have a capacity of 20,000 common brick per day.

Neal Allen, Chas. L. Kirk and Mr. Casey have organized the Castle Rock Brick & Tile Co., with a capital stock of \$25,000, to establish a plant in Castle Rock, Colo.

The Cainsville Brick Co., of Cainsville, Mo., has begun operating its plant which was but recently completed.

The Kansas City, Mexico & Orient Ry. is taking steps to encourage the establishment of brick plants along its line between Fort Stockton and San Angelo, Tex., where it is claimed a good quality of shale exists.

The Marshall Brick Works has been organized in Marshall, Tex., with a capital stock of \$40,000, with Chas. Cobb, Jr., as president; W. H. Pugh, general manager, and J. W. Ditwiler, secretary and treasurer.

E. R. Norton, J. M. Caldwell and F. C. Bush are organizing a company in Benton, Ark., with a capital stock of \$10,000, to establish a brick plant.

The new building to be erected for the Lee County State Bank at Lexington, Tex., is to be constructed of brick made by the Lexington Brick & Tile Co.

It is reported that the Union Brick Co. at Iola, Kan., will soon increase its capacity to 80,000 brick per day, a new 15-foot fan to utilize the waste heat from the kilns being among the improvements to be added. This company has run its plant steadily during the season and has not been able to meet the demand for its product.

It is reported that Winfield, Kan., is to have a new \$50,000 brick plant. The clays are now being tested and if found satisfactory it is said the plant will be a reality very soon.

A movement is on foot to locate a brick plant at Bowie, Tex. The Bowie Chamber of Commerce is promoting the deal.

Several brick buildings are being erected at Bryan, Tex., including a three-story brick dormitory for the Baptist Academy.

LIVE SEATTLE NEWS.

Seattle, Wash., Oct. 17.—Latest information as to the clay business is, that things are going along in about the same old groove, with the possible exceptions that the Washington Brick & Tile Co., the Queen Brick & Lime Co., and the Lake Union Brick Co. have all closed down their plants. We have been informed that the closing down of the Lake Union Brick Co.'s plant is only temporary. I notice that in your last issue, you had the Little Falls Brick & Clay Co.'s sewer pipe plant located at Toppenish. This is incorrect, it should have been Sopenah. The Little Falls Fire Clay Co.'s paving brick plant at Bayne has resumed operations, and they are working on shale at the present time. They have 35 men working, but expect to have a full crew before very long. Julius Koch who has charge of the burning at the plant is giving eminent satisfaction and has the kiln fully under his control. S. J. Geijsbeek, consulting engineer for clay plants, put in ten days at the Coast Clay Co.'s plant at Bellingham. W. A. Doyle, general manager, is very optimistic about this project.

Mr. James Gibson, the congenial and painstaking secretary of the Washington Clay Workers' Association, who has severed his connections with the Hill Brick Co., tendered his resignation as secretary of the Association. All the members deeply regret his departure from their midst. A testimonial banquet was tendered to him at the Butler Hotel Cafe in this city, on Wednesday evening, the 27th, at which were present W. T. Houlahan and Frank Houlahan of the Builders Brick Co.; Mr. Lumsdaine and Mr. Morrison of the Denny Renton Clay & Coal Co.; F. C. Harper of the Harper-Hill Brick Co.; F. Lohse of the Lohse Brick Co.; Cecil Ridge of the Lake Union Brick Co.; D. F. Powers of the Pontiac Brick & Tile Co.; Mr. McMichael of the Northern Clay Co.; Robert Niedergesaes of the Seattle Brick & Tile Co., who is president and general manager of that company; J. E. McGrath of the Washington Brick & Tile Co., and Mr. Gibson himself. A very pleasant evening was spent. Mr. Gibson responded to the toast, "Our Guest," in a pleasing manner, and expressed his regret at having to leave so social a bunch as the Washington Clay Workers. He expects to return again when they can all agree on making uniform size brick, and when other differences are adjusted that are now existing, and last but not least, when he has expended all the moneys he has acquired from brick making, in his new business as an orchardist.

Mr. Gibson, who has been the mainstay of the Association, has purchased a large ranch at Orcas Island in the eastern part of Puget Sound district. He has the best wishes of the Seattle "bunch." During the evening there were several expressions from the different members on the status of the brick business. The common brick men were very pessimistic in their remarks. Mr. Lumsdaine of the Denny Renton Clay & Coal Co., was very optimistic about the present business and the future business also. It was very pleasing to know that at least one brick concern was doing well. The others could not express themselves truthfully in the same manner that Mr. Lumsdaine did, but are all living in hopes for a better future business. Mr. Frank Houlahan was elected to fill the position of secretary in place of Mr. Gibson.

Before the meeting broke up for the evening Mr. Lohse asked for an expression on the advisability of holding another convention. Mr. Powers aptly suggested that it was up to the clay working concerns in Oregon to invite the Washington Clay Workers, and see if both of them cannot make an effort to combine for mutual interests. This suggestion was unanimously adopted, and the secretary was instructed to correspond with the Oregon Clay Workers on this subject with that end in view.

Mr. E. J. Shaw, of the American Clay Machinery Co.,

has gone up to Alberta, on a hunting expedition. What he is hunting for we cannot say, but as he did not take a gun with him, we presume he can get fire arms when he reaches that country. The different brick men received notice in this territory, that Mr. Raymond Bond who was employed by the C. W. Raymond Co., is no longer with them. He, we have heard, is going into business for himself in Canada. He has the best wishes of all the brick making concerns in his new business.

THE CHICAGO SITUATION.

Chicago, Ill., Oct. 13.—Chicago has just been celebrating "Fire Prevention Day," October 9, it being the 40th anniversary of the great fire which destroyed the greater portion of the city. This is a memorable day here, and one that has much significance for the material man, and for the architect and contractor. There is much to think of on this day with reference to the prevention of fires, and the losses sustained thereby. With the stupendous construction work being carried on these days there is ample reason for using the best of fire-proof materials.

Chicago has learned much in the reconstruction of her buildings, and in two score years she has accomplished much in the way of improvement and has a large area of burned clay fire-proof buildings. She has been partial to burned clay products, and miles and miles of her streets are lined with buildings constructed of brick, terra cotta and other fireproof materials. More and more consideration is being given to this matter, and on this account there is much burned clay being used in the work under way.

Naturally the clay products people are interested in this progress, and they are doing all that is possible to make the demand for all kinds of clay products more and more active. The plants are still finding plenty to do to keep them active, and plan to continue operation until the cold weather sets in. The demand for many kinds of clay products continues to be favorable and the fall has at least a very hopeful aspect for the clay operators.

The call for building brick has been fair, and the outlook is much the same as far as can be seen now. The demand during this year has been less than it was for several years previous; due for the most part to the several strikes that so demoralized business in the building lines during the greater part of the year. The stock of common brick on hand now is rather large, and the movement is not as brisk as it might be. Prices continue the same as in the past, and the general situation has nothing of a startling nature at this time.

The demand for face brick has been some better than in the summer months, and there has been a slight revival of this branch of the industry, since the settlement of the labor trouble. A large number of buildings are being hurried to completion before the advent of real winter weather. The number of smaller buildings erected was reduced this year on account of the strikes and this has been felt by many lines. The face brick men feel more hopeful and are satisfied that the fall trade will in a measure make up for the losses of the earlier part of the year.

Reports are that sewer pipe business has been dull, and the prices are lower. It seems the sewer pipe manufacturers are, in this locality, too anxious to dispose of their products, and, on this account, they are continually lowering the prices, thus destroying the profits of the industry. It seems that it would be a wise move to endeavor to keep the prices up instead of forever hammering them lower, as has been the case so much in this section of late.

Paving brick, flue linings, fire brick and other clay lines are moving along very well, there being a very steady demand for most lines. Paving brick is slower than it was, as the year is nearing an end. Conduit is not overly active, and the year has been only a moderate one for this industry. Fireproofing has been in active demand, and the use of this seems to be showing a very gratifying gain. Fire brick are among the most active movers in the clay product line, and there is evidence here of a very pleasing business.

One of the encouraging signs of the times has been the demand for architectural terra cotta. The amount of this material being used has become a most important factor with the manufacturer, and the plants are doing a most gratifying business. It looks very bright for this industry, it is not only being used on large structures, but on many

smaller ones as well and it is proving to be one of the popular forms of building material.

The Midland Terra Cotta Co. is now erecting a large addition to its plant, which will greatly increase its capacity. This organization, since beginning operations a short time ago, has been doing nicely. The contracts are now increasing and the outlook for the remainder of the year is very favorable. A number of nice buildings in which their material was used have about been completed and the number of orders is growing all the time.

The Wm. E. Dee Clay Products Co. notes that business is not overly rushing but regards the outlook fair for the fall. At Mecca, Ind., where one of the company's plants is located, a large addition is being erected. With this completed the company will be able to manufacture larger size pipe than is now possible.

Mr. White, of the Jenkins & Reynolds Co., says that there is a better demand for face brick now than was noted in the summer months. He looks for a very nice fall demand and reports that the outlook is more than gratifying now.

The Purington Paving Brick Co., through Mr. Conneau, says that the demand for brick during the summer months was very fair, but that now things are less active and the best of the business for this year has passed. However, the outlook is favorable for the industry, and the increase in the use of paving brick is gratifying.

The Mason's Specialty Co. report the demand for many lines of clay commodities to be somewhat dull just at this time. There has been only a moderate demand for some time past, and the indications do not now offer any startling prospects.

The Carey Brick Co. find the call for building brick to be as active as the conditions permit. The plant is being operated, and some brick is moving out, but there has been nothing like a rush. Considerable brick are being stored, and a large supply will be made this fall to prepare for next spring's demand as it does not seem likely that there will be any increase in the demand this fall.

Mr. Moulding, of the Thomas Moulding Co., stated that the call for face brick with his company was very good. This organization had the contract for the white enameled brick for the Insurance Exchange Building, and made a record on this job. Brick are also being furnished for several other large buildings here by this company.

The Clay Product Co. is still selling some conduit, but there has been a noticeable decline in the demand. The year, taken as a whole, has been less active than it was hoped for, and still the increase in the use of conduit has been worthy of note. There will probably not be much doing for the next few months in this line.

THE SMOKY CITY.

Pittsburgh, Pa. Oct. 11.—With the approach of the fall season, there has been a slight let-up in new construction work, and this has been reflected upon the building brick manufacturers, to a slight degree. However, work that has been started will continue until completed, and this will keep many plants in active operation for sometime.

Fire caused a loss of about \$3,000 to the plant of the Remney & Son brick plant in Northeastern Philadelphia.

Unusual interest has developed in the Pittsburgh district over the use of hollow tile for small home construction, this being noted since the Pittsburgh Council passed an ordinance authorizing the greater use of this building material.

Fire caused a loss of probably \$35,000 and threw 50 employes out of work when the plant of the Volant Brick Co., at Volant, Pa., was destroyed. The plant was the main industry of the little town, and it is possible that it will be rebuilt.

Pittsburgh is to have a Land Show, similar to that held annually in New York. This will be an event of a fortnight's duration, Oct. 12-28, at Duquesne Garden, and it is believed that the 200,000 attendance last year will be greatly increased. Brick manufacturers are taking considerable interest in this show, and the sale of building brick will be pushed.

Joseph Hosfield, of Shippensburg, Pa., has formed the Dillsburg Clay Products Co., with \$5,000 capital stock. Brick and tile will be manufactured.

Dr. C. G. Robinson of Jeannette, Pa., 26 miles east of

this city, is forming a company to build a new brick plant east of Jeannette. It will have a capacity of 60,000 brick per day, and clay will be taken from 26 acres of clay lands which the new concern will control.

At Red Tank, Pa., tests of clay are being made, and if these prove successful plans will be developed for the erection of a new brick plant.

Improvements are being made at the plant of the Freeport Clay Products Co., which will tend to increase the capacity of the plant considerably.

C. F. Lane, of Detroit, Mich., and W. P. Hart, of Syracuse, N. Y., have formed the Syracuse Unit Brick Co., with \$240,000 capital stock.

Improvements are being made at the plant of the Rockwood Brick Co., at Rockwood, Pa. The capacity is to be increased by installing heavier machinery in some departments.

Mt. Union Refractories Co., Mt. Union, Pa., received a Pennsylvania charter Sept. 12. Capital stock of the company is \$300,000. The directors are: R. P. M. Davis, president and general manager; F. D. Halstead, secretary and treasurer; C. V. Hackman, superintendent; Wilson Kistler and P. P. Griffin. Messrs. Davis and Hackman have been connected with the Harbison-Walker Refractories Co.; Mr. Davis as works manager, and Mr. Hackman as superintendent of that company's Mt. Union plant. Mr. Halstead was formerly secretary and treasurer and general manager of the Queen's Run Fire Brick Co. The new company has begun the erection of a plant for the manufacture of silica brick.

Following the completion of important improvements the plant of the Rockwood Brick Co. has resumed operation. The plant is equipped with latest improved brick-making machinery, and the company's manufactured products will hereafter command the highest market prices in consequence.

The Beaver Clay Manufacturing Co., whose plant is located at New Galilee, Beaver county, about ten miles west of Beaver Falls, on the Pittsburgh, Fort Wayne & Chicago railroad, are exclusive manufacturers of face brick. Large deposits of excellent fire clay and shale make possible the production of brick, that in point of mechanical perfectness and beauty of color are not to be excelled anywhere. Beaver clay brick are made from the clay and refractory shale. Because of the high heat-resisting quality of the raw material, the brick must be burned at a very high temperature in order to get the proper hardness. As a result the brick are waterproof, strong, tough and vitrified, capable of resisting great strains and stresses and impervious to the action of frost or other severe weather conditions.

OUR BUCKEYE LETTER.

Columbus, O., Oct. 12.—Trade conditions in the clay working industry of Ohio display more or less apathy. In the central part of the state, there is more or less activity in the building lines, while in the eastern portions, there is not very much new work under way. A few scattering contracts are being awarded, but the number is less than during the previous month.

Although H. H. Smith of the United Brick Co. has announced that the capacity of the plant at Conneaut, O., has been almost doubled, the company is still being rushed on its deliveries, and their orders are exceptionally good for this season of the year.

Operations have been resumed at the plant of the Heinisch-King brick plant, which was idle for several weeks, while a new dry pan was being installed.

The Ohio Pottery Co., of Zanesville, has made extended experiments with clays found at Elkins, W. Va., and this may result in the establishment of several clay working plants in Elkins. P. E. Clark and O. J. King of Elkins, W. Va., are interested in the development of these clay deposits.

Hollow tile manufacturers throughout the country are interested in having the building code of Youngstown changed which will permit of the further use of that product in building construction. Manufacturers have retained Attorney Frank L. Oesch to look after their interests. An ordinance which was burned in committee is to be resurrected.

News has been received here that the Mack Manufacturing Co., of New Cumberland, W. Va., will commence at

once the rebuilding of their "Union" plant which was greatly damaged by fire several months ago. Brick buildings are to replace the frame structures, and the equipment will be the most modern to be had on the market.

With a capital stock of \$5,000, which for the present is said to be only nominal, the formation of the Mahoning Brick Co., of Youngstown, O., has been completed by S. D. Pearson of Youngstown.

The General Electric Porcelain Co., of New Jersey, which owns six plants, four of which are in Ohio, will confine the manufacture of all hypotential electric products to its plant at New Cumberland, which was the former location of the Chelsea Pottery Co.

Charles Mercer, a well-known Zanesville contractor, will open an office in Zanesville within a few days where he will represent the Hydraulic Pressed Brick Co., of Zanesville. The brick of this company have been used in the construction of some of the largest buildings in the country.

Following an inspection of the plant of the United Brick Co., at Conneaut, O., announcement was made that plans would mature at once for the enlargement of the plant. Considerable capital from Erie, Pa., is interested.

If Cincinnati suffers from an unusually severe winter there will be a shortage in the suburban brick market next spring. This is mainly due to the new Cincinnati Hospital, on which 7,000,000 brick will be used. Most of the brick used in this market are dried in the open air, and this contract, in addition to the fact that suburban builders are going in for dwellings constructed with the same material, will practically clean up the supply on hand. If the weather permits much out-of-door work and drying a new "crop" can be produced, and thereby strengthen the market. Otherwise the situation will be somewhat strained until about June 1 next year.

The Uhrichsville Clay Co. turned out its first lot of brick Monday. It is located west of Uhrichsville and was incorporated several months ago by Uhrichsville, New Philadelphia and Tuscarawas men.

DOWN IN NEW ENGLAND.

Berlin, Conn., Oct. 12.—Most of the local brick yards at Berlin, Conn., have closed for the season and it is stated that the other brick concerns will close down by the middle of October. The past summer season has been a successful one for the Berlin brick manufacturers as well as most other plants throughout the state. While the output has been about 10 to 15 million brick less than the average, it is said that the cause was the lateness of the yards in starting up and not the decreased demand for the product.

The Berlin brick manufacturers are considering the erection of a one-story brick building on the state fair grounds, as a permanent exhibit.

The Westfield Brick Co., at Westfield, Mass., has recently purchased a tract of five acres of land.

Brick manufacturing in Maine has been boomed by the Bangor fire and according to the manufacturers the output will be at least 25 per cent more than in former years. The Bangor Brick Co. made about three million brick last year, while this year they made from four to five million. The Brooks Brick Co. of Brewer report the same output for the last two years. The Getchell Brick Co. made 300,000 more brick this year, while John McDonald of Brewer made 800,000 last year and this year will probably make 1,200,000. It is thought from present indications that this business will continue for several seasons before the old business section is entirely rebuilt.

Building construction, in Boston, during the past few months has been going on, at a heavier rate than for several years. During June, July and August 568 permits for new construction were issued at the local building commissioner's office, compared with 394 during the corresponding period of 1910, an increase of 174. During August 173 permits were issued, of which 23 were for wood construction and 50 brick. Business all told is said to be of fair volume but is described as unevenly distributed.

The contract for the Peter Brigham Hospital, in Boston, was secured by the New England Brick Co.

Extensive additions are being made to the South Ter-

minal Station in Boston, involving an expenditure of half a million dollars. The addition will be constructed of gray Norman brick with pink granite trimmings.

Boston is declared to be in great fire peril by building experts, and it is said the city ordinances will be changed so as to prohibit the construction of any but fireproof buildings within the congested business district.

The Hoosac cotton mills are to build a new \$800,000 addition to their plant in North Adams, Mass.

The Connecticut legislature has been generous to the brick men during the present session. The present appropriations amount to \$500,000 and there are requests for additional buildings for State Armories and Hospitals which will admittedly be granted, bringing the total appropriations up to a million. In each case brick will be the principal material used. Connecticut brickmakers are sure that it pays to have one of the craft in the representative chamber and congratulate the Hon. Joseph Towers on his good work during the present session.

The New Britain Brick Co., incorporated, with brick yards in Newington, Conn., have filed a petition in bankruptcy. The assets are valued at \$51,150.80 of which \$33,000 is real estate. The liabilities amount to \$56,768.82.

DETROIT NEWS.

Detroit, Mich., Oct. 12.—There has been an increase in the demand for brick, here, during the past few weeks. Building operations in various parts of the city are now being rushed, and contractors are entering large orders for supplies. The demand is largely for building brick, paving materials declining in importance during the month. There have been no changes in quotations during the month, and brick makers do not believe there will be any for some time. A number of local concerns are still working on orders filed last spring, and they say it will keep them laboring steadily until cold weather to fill the early season's demand. The northern part of the city is building up fast, and most of the houses are being erected with fireproof restrictions on restricted property. This means, then, that much of the material entering into the buildings is brick. In other cities throughout the state a good demand for building materials is reported, and contractors report that they will be able to work steadily until the first of December.

Some important building projects have been entered into during the past few weeks. The Dime Savings Bank, which has been contemplating the erection of an immense business block in the city, has announced that contracts for the structure have been let, and that preliminary operations will begin Nov. 1. The building will be 20 stories in height, and will be on one of the principal down-town business blocks. Another important project is the erection of stands at the new ball grounds. The baseball company has awarded a contract to a Cleveland firm for the erection of stands, seating 23,000 people, on the present site, and the work of tearing down the old stands has already begun. The Hudson Company has erected a 10-story business block on the main thoroughfare of the city, and another big block has been constructed for a St. Louis company that has opened a branch store in Detroit.

The Ford Motor Co., in Highland Park, a northern suburb, has started work on a big addition to its plant, and different other motor car manufacturing companies have announced preparations for building operations. The Herreshoff Motor Co. is constructing a plant in the northern part of the city, and the new buildings will be completed Dec. 1.

CITY OF BROTHERLY LOVE.

Philadelphia, Pa., Oct. 13.—The building record for the season has been a fairly good one, not a record breaker, but there has been considerable movement in the line of office and factory buildings and the erection of the small brick houses in West Philadelphia and other sections continues strong. There has not been as much demand for brick as in some years, however, as many of these buildings were built of stone, iron and concrete. There has been more brick stored at the yards this year than last year.

There are a few large jobs to go ahead which will mean the use of considerable brick. There will be built two new district high schools in West Philadelphia to cost \$1,126,750. The contract for the 10,000,000 brick which will be furnished before January first goes to the Independent Brick Selling

AN ADVERTISER'S OPINION



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CRUSHING AND GRINDING MACHINERY

OLD COLONY BUILDING

CHICAGO Sept. 21st 1911.

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CLAY INDUSTRY

Clay
Shale
Fire Clay
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Sand Rock
Cobble-Stone, Etc.

FIBROUS MATERIAL

Tan Bark
Oak and Hemlock
Licorice Root
Wood Pulp
Pulp Chips
Reclippers
Palmetto
Oak Chips
Dye Woods
Drug Woods

FERTILIZER

Phosphate Rock
Tankage
Tobacco Stems
Bones
Oyster Shells
Guano
Marl Shells
Fish Scrap, Etc.

MISCELLANEOUS

Sand Stone
Oil Cake
Asphaltum Rock
Ochres
Kaolin
Corn Cobs
Peat
Barytes
Mica
Sugar
Salt
All Chemicals
Stick-Lac
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Paper Stock
Guayule
Alfalfa
And many other materials too
numerous to mention.

Gentlemen:-

We have just received a copy of your booklet "Facts" and wish to compliment you on the "bold manner" in which you bring out your "Verified Paid Circulation" as well as the "artistic manner" of the booklet itself, as large advertisers, we are interested in this booklet for two reasons.

First, it shows conclusively that you have no fear of bringing out your paid circulation, which most publishers "side-step". Your own statement on page 3, second paragraph of the booklet, conveys my sentiments precisely:

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Second, as the writer edits most of the advertising literature for our Company, I am always interested in a handsome catalog or booklet, this is the most attractive and artistic piece of literature I have had the pleasure of reading in years.

As to my opinion of "Brick and Clay Record" as an advertising medium, I did not need these facts to convince me of its value, the many inquiries we receive mentioning your paper, properly followed up and resulting in sales convinced me long ago that your paper was so far ahead of any other in the Clay field that I often wondered how other papers in this field could exist.

There is no "bunk" about these statements, and we expect no favors in return, personally I admire any one who will "show" his advertisers what they are getting for their money.

Very truly yours,

THE WILLIAMS PAT. CRUSHER & PULVERIZER CO.

M. J. Williams
General Sales Agent.

Co. of Trenton, N. J. This is the largest contract of this kind ever awarded in Philadelphia.

The city will build the finest and largest convention hall in the world in Fairmount Park, to cost complete \$4,000,000. It will seat 20,000 persons and will be 624 x 450 ft. in size. There will be no stairway, inclines only being used. It will be fire and panic-proof and will be built of white brick, with terra cotta trimmings.

The Clifford Brick Co., of Cliffwood, N. J., have been working to capacity this year, having a larger and better plant, through the improvements made last year.

The Clymer Brick & Fire Clay Co., of Indiana, Pa., and the Williams Grove Co., of Clearfield, Pa., have had some good brick contracts for paving purposes.

William Rees succeeded J. H. Noel, who died, as superintendent of the Williams clay mines of the Savage Fire Brick Co. at Hyndman, Pa.

The Pittsburg-Buffalo Co. have been building another sewer pipe plant at Johnetta, Pa., and have enlarged their brick plant.

J. B. Oberly, of Wilmington, Del., says he is fairly busy, but not much real estate has been changing hands this year. The city is spreading to the north end a good deal and he has decided to build another brick plant in that region to accommodate the increased demand there. He does not know what system he will use; at his present plant he uses the Martin soft mud machinery, but the new plant may be a stiff-mud plant. He has 46 acres of land in the new location, has plenty of clay, mostly for pressed brick making. His present plant has a capacity of 50,000 a day and the prices obtained average \$8.50 per ton. Some of the manufacturers have been cutting prices, but find that in the end it does not pay.

M. D. Valentine, a fire brick manufacturer of Woodbridge, N. J., died recently. He had been in the brick business forty years.

The Lock Four Brick Co., of Charleroi, Pa., have added more Stevenson machinery for the making of shale brick.

The Shenango China Co., of New Castle, Pa., shipped an order of \$15,000 worth of vitreous porcelain underglaze decorated ware to the government, for the Mare Island navy yard at San Francisco and to the League Island navy yard at Philadelphia. The orders were of the best kind and a credit to this firm.

The Standard Sanitary Pottery Co., of Elizabeth, N. J., have added more kilns and have about all the work they can turn out.

The Sahre-Fisher Co., whose plant is at Sayreville, N. J., and local office here in the Heed building, own 3,000 acres of land and their plant has a capacity of 1,250,000 brick a day. They are busy, sell all they can turn out, make all kinds of brick except paving brick and have made many improvements to the plant.

The Allentown Brick Co., of Allentown, Pa., have put in a new dryer since their bad fire and new modern machinery, which gives the plant a capacity of 12,000,000 building and paving brick a year. The new officers are: Earl E. Litz, president; A. B. Eilback, secretary and treasurer; C. K. Halternan, assistant secretary and treasurer; Stanley Kitchel, sales manager. This firm bought out the Allentown Paving Brick Co.

Thomas Robinson & Co., of the Real Estate Trust Co., handling sewer pipe, have a big city job at Bristol, Pa., using 50 cars of sewer pipe, 75 cars at Wilkesbarre, ten at Scranton, six at Nanticoke, Pa., and have advanced all prices twenty per cent. All their pipe comes from the Ohio River districts.

J. Al. McAnney, of 418 Bartlett building, Atlantic City, N. J., agent for the Sahre & Fisher Co., has been building a new brick store building, in that city, at California and Fairmount avenues.

H. T. Billick, head of the Monongahela (Pa.) Stone, Clay & Brick Manufacturing Co., bought thirty-seven acres of fine clay land in Fayette county, Pa., on which a new plant has been built.

The Pedrick Brick Co., of Flemington, N. J., have increased their force and have been running to full capacity.

The Yellow Rock Pottery Co., of Mercer and Clementine streets, was burned some time ago, but is now rebuilt and is in operation at Bridesburg, a suburb.

Winternight & Garvin, of 208 Denckla building, have dissolved partnership. H. A. Winternight will continue the business and all lines previously represented.

T. H. Garvin goes on the road for the Zanesville Stoneware Co. and Peacock & Roop, of 1017 Filbert street, this city.

The American Manufacturing Co., 411 Market street, represented by P. K. and F. B. Clark, have put in new samples from the Zanesville (O.) Pottery Co. The Ohio China Co., which they represent, has brought out new shapes of dinner ware, which is a severely plain shape, a revival of a style of many years ago, and a departure from the squares used so much. A new firm they are representing is the American Gold Co., of New Martinsville, W. Va., decorators of a fine line of china novelties.

The Delaware Terra Cotta Co. of Wilmington, Del., say they have no cause to complain and that business has been good with them. A new Martin machine has been put in for stiff mud brick and they make 50,000 a day of stiff mud and 40,000 of soft mud brick. A good demand is reported for flue linings as they are required in all buildings. They furnished the brick for the new Dupont building at Thirteenth and Market streets, Wilmington. The Duponts will also build a hotel there, which will occupy an entire block and will cost \$1,000,000.

F. Seidler's Sons, Nicetown Lane, North Philadelphia, have been busy as usual, but their supply of clay is getting low at their present plant. As they own a large tract of clay property at Frankford they will no doubt build a plant there, as their product is always easily sold and little of it remains on the yards.

The New Jersey Cement Stone Works has been incorporated at Passaic, N. J., to manufacture and sell clay products, with a capital of \$20,000, promoted by Harold Danielson, Gilbert D. Bogart and Elizabeth Hultse, of Passaic.

The Carroll Bros. yard is pretty well cleaned up of their product as they have had some big operations to furnish brick for.

The Gleasanton (Pa.) Fire Brick Co. have been running to full capacity and some months have had an extra large business.

AN Atlas Engine will
not make better
bricks, but it will likely
make more of them.

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BRICK

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THE LEADING CLAY JOURNAL OF THE WORLD

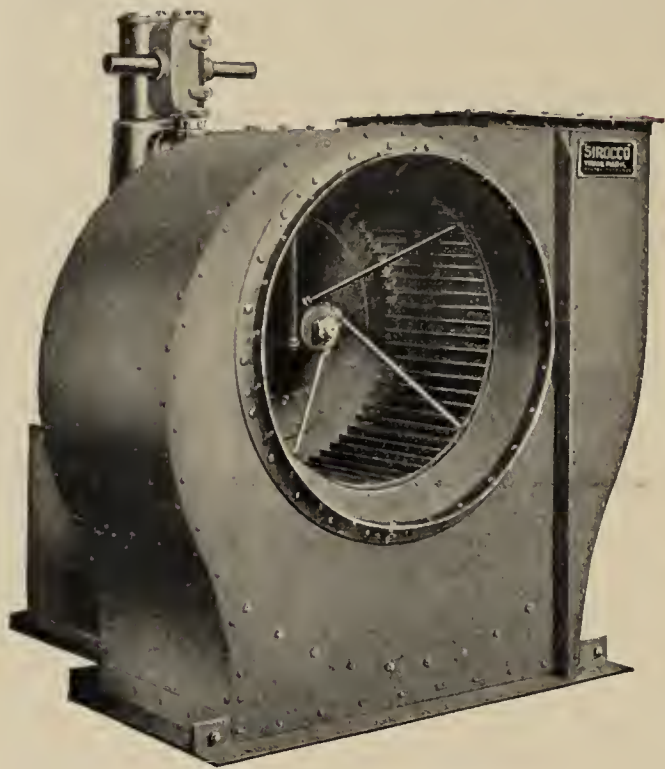
Table of Contents

Page	Page
Windsor CastleFrontispiece	Editorial Comment342
A Clay Worker Abroad—Impressions of English Clay Working Methods.....325-330	For Our Architect Friends—Death of John McLaren .....343
Progress of the Industry.....331	New Electric Recording Instrument.....344
Statistics of the Clay Industry for 1910 332-333	The Superintendent—More Burning Ques- tions—Automobile Lift—Important Legal Decisions .....345-346
Remarkable Investment Proposition—New Keokuk Face Brick Plant.....334	Drain Tile and Drainage—Action of Alkali Salts on Cement .....347
Motor Drive for Brick Plant.....335-336	Paving Department—More About the De- troit Muddle—Standard Tests of Paving Brick .....349-350
Notable Brick Fence—Brick vs. Cement for Garden Walks .....337	Pottery Statistics for 1910.....351
Denison Tile .....338	Recent Trade Literature—Gas Well a Men- ace .....352
Ten Thousand Dollar Boost—Architectural Journals Favor Show .....339	Trade Review—News of the Eastern Mar- ket—Our Buckeye Letter—Kansas City and the Southwest, etc. ....353-360
Conduit System of Conveying Steam...340-341	
Reducing the Pay Roll—The Canton Turn- tables341	

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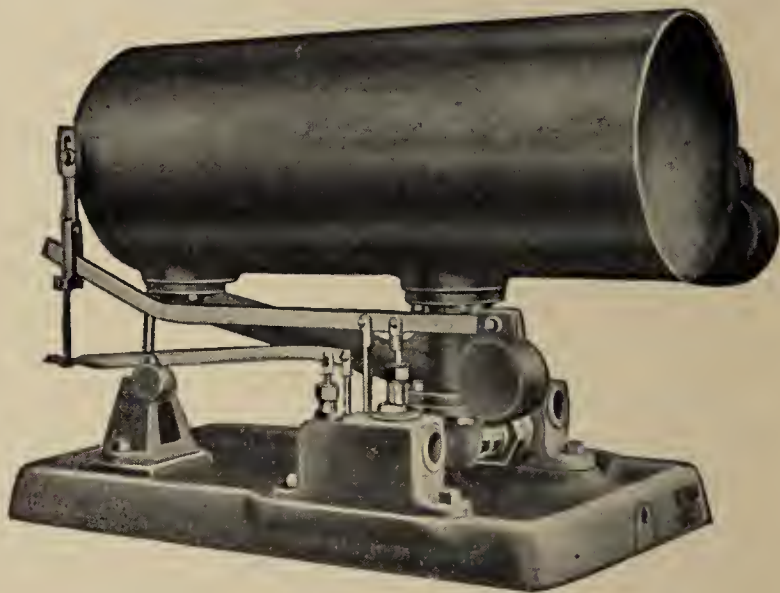
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VOL. XXXIX—No. 9

BRICK

AND CLAY RECORD



NOVEMBER 1, 1911

A CLAYWORKER ABROAD

Jottings by "Brick and Clay Record's" Representative During a Recent Visit to England—Something About the Famous Doulton Works—Impressions of English Clayworking Methods

One great truth has been absorbed by me as the result of my trip among the clayworkers of Europe and that is that in the great clay industry there are really no government boundary lines. We clay men all belong to one great big family and our interests and troubles and advantages are about the same the world over. I found the brickmakers, of England and of the Continent, very much like my fellow clayworkers in Chicago and was enabled to get upon a common footing with them at once on familiar

foot on the gang-plank of the out-going Lusitania, last March, consisted of more than the mere anticipation of an enjoyable vacation.

The reader will not be interested in the doings of a mere individual or in any recital of his personal experiences and I will, therefore, pass over the details of my trip across the Atlantic and tell first of my arrival on the English coast.

My first sight of the British Isles was the seaport town



The Strand and Charing Cross—All the Buildings in Sight Are of Brick Construction—This Gives An Idea of the Average London Street Scene.

ground. Wherever I went, I received the "glad hand" and was much impressed by the cordiality and hospitality of our foreign brethren.

We Americans are accustomed to the idea that the clay working industry in our own country is but the offspring of Europe, where clay manufacturing has been carried on for so many centuries and where ceramics has reached such a high state of perfection. I have, therefore, always felt a great desire to visit the clay plants of the great foreign countries and to compare, for myself, their methods with our own. Consequently, my pleasure in setting

of Fishguerd on the west coast of Wales. Fishguerd is a little town at the present time being developed by the Cunard Steamship Co., and in the course of a few years they expect to make it a representative port of entry. The reason for its existence is that it affords the quickest means for transferring the passengers going direct to London. They dumped us off into a small boat, from the decks of the Lusitania and we were soon on board a fast London express and here I had my first experience in being locked into a railroad train.

This was a night train but if it is a sample of English

sleepers, it certainly was rather unsatisfactory so far as rest was concerned, preparation for the night, in my case, simply consisted of taking off my collar, tie and shoes and trying to make myself comfortable, in this manner, for a long night's ride. I suppose they have sleepers but I failed to see one during my trip.

My first business, in London, was to call on that gentleman of international repute, the honorable H. G. Mont-



Double-Deck Trolley Cars—An Idea Which Has Not Yet Been Adopted in America.

gomery, editor and publisher of the "British Clay Worker," and I found him to be a most genial gentleman, and one of the best informed men I have ever met, regarding all clay working matters. Mr. Montgomery is of distinguished appearance, a man of rare ability and a delightful conversationalist. He has traveled extensively and is exceedingly well informed regarding the manufacture of all kinds of clay ware in the British Isles and European countries. He made a visit, a few years ago, to America and many of our brethren in the United States will remember him and hope to see him again at the coming Clay Products Show in Chicago.

Mr. Montgomery did more than "extend the glad hand." He put himself out in advising and explaining and assisting me to make my investigations of clay products manufacturing in England, and his suggestions and assistance were of the utmost value to me. I had the pleasure of dining with Mr. Montgomery at his club (the Savage Club), an organization composed largely of professional men, and had there my first introduction to the modern-day Englishman.

Impressions of London Buildings.

London is distinctively a city of brick, or rather a city of clay, for not only is brick almost exclusively the building material for walls but practically every roof is a burned clay tile roof, thus in a way making the city largely of fireproof construction, so far as the exteriors are concerned. A frame building, in this great metropolis, is an oddity and the few that remain are simply relics of the old London.

London itself stands on a bed of clay and much of the old portion of the town was built from its own mud. This clay is far from being a satisfactory raw material, however, being of a sticky character and difficult to work and none of the old-style brick are now made in the city.

Because of the universal use of red tiling for roof cov-

erings, and the fact that most of the building brick used are in some shade of red, the general color effect of all London architecture is red. This does not imply, however, that this is the only color of brick that is popular. On the contrary, one will see in the facings of buildings on all the principal streets, a large variety in color-effect and texture, including buffs, salmons, grays and to some extent the famous blue brick, the manufacture of which will be described in another article of this series.

In the case of embankments along the railroad lines, and even in the bridges and bridge arch construction, the blue brick, made near Birmingham, England, is used extensively. These brick are one of the very best types of the hard-burned impervious brick made in England. They stand any amount of rough handling and make a very substantial wall. The maintenance of the right-of-way along the majority of the railroads is in much more perfect condition and more sightly than the usual course traveled along the American lines, with the unsightly banks that are washed down from time to time and overgrown with weeds. These brick walls can be seen at either side of the track, almost continuously along the railroad lines. The London and Northwestern R. R., particularly uses millions of these brick yearly. This use for brick seems to offer great possibilities to the American manufacturer and doubtless the time will come when American railroads will keep their lines in equally as good shape as do the English, and thereby open a new market for American-made brick.

For a city of seven million people, the most surprising condition that I noted was the absence of high buildings. With the exception of cathedrals and some of the great public buildings, there are few structures over five stories high and a seven-story building, in London, is considered a monster. This condition makes the use of steel construction unnecessary and in London, and in fact all European



The Old Curiosity Shop.

cities which I visited, there is little of the steel and fireproof construction now so generally adopted in America.

For this reason, terra cotta fireproofing, as it is used in America, has no extensive market in London, and is manufactured in England on a very limited scale.

The style of most of the building construction in London is solid brick walls built up of common brick and faced with a better quality. The main construction has been accomplished by the use of the best brick, uniform

in color and with rather small mortar joints, although at this time the manufacturers are greatly interested in producing the rough face brick which they term the "rustic," which is meeting with the approval of many of the architects, this brick being laid with a heavier mortar joint and often raked.

I naturally was curious to know something of the market for brick in London, and was surprised to learn of the low prices at which common brick were frequently sold there. At one time, in the past few years, pressed brick, I understand, made in the Peterborough district sold on the yards as low as four shillings per thousand, which in American money is equal to 96 cents. These brick mentioned are the cheapest form of brick made and while manufactured by the dry press process, are not used as face brick but simply as common brick for wall backings, par-

There is certainly no standard of size in the manufacture of brick in England, the size varying in the different towns. The chief building size is 9 in. in length, $4\frac{1}{2}$ in. in width and 3 in. in thickness. The sidewalk sizes are 12 in. in length, 6 in. in width and 2 in. in thickness.

Brick is not used to any great extent for sidewalks in London, although I saw many interesting and satisfactory examples.

Speaking of sidewalks reminds me of a novel sight I witnessed, which will surely interest my American friends and which is illustrated in the accompanying picture. This is one of the so-called sidewalk artists, who are nothing more nor less than common beggars. These men will spend hours in drawing wonderful pictures in various colors of chalk upon the sidewalks and when exhausted with their work, will lie down beside it and go to sleep with their



Magnificent Home of the Famous Doulton Pottery.

titions, etc. The market has improved somewhat in the last few years and today common brick is selling at prices which permit a small margin of profit to the manufacturer, although the conditions in England are far from satisfactory at the present time. In fact, I learned that owing to the overstocked market and bad conditions in the brick industry, many brick manufacturers in England in recent years have been obliged to go through the form of bankruptcy, which in England is somewhat different from our own. These laws are such that it is not particularly a disgrace in England to go through bankruptcy proceedings and the laws are not used there as they are in this country, to evade obligations.

Both dry pressed and stiff-mud brick are used extensively as well as soft-mud brick for wall facings and the best made English brick is a most creditable brick, comparing very favorably with the best made American brick. The English, however, appear to be far behind in producing the varieties in form, color and texture of facing brick that have been developed in America. I believe this is largely because of the absence of as great a variety of clays available in England.

cap left in an inviting place for the stray pennies of passersby.

England Behind Us in Development.

It is distinctly noticeable to the American visitor, and conceded by the English clayworkers themselves, that they have not developed the variety of clay products which we have in our own country. Clayworkers of prominence attribute this lack of progress largely to the fact that the clay working industry has not had the inspiration and co-operation there that it has had in this country as well as in Sweden and Germany, from scientific bodies and from ceramic schools and ceramic departments of universities. There is no place in England, where a young man can go to take up ceramics as a science and what few English technical men there are, have all been trained abroad. In visiting the English clay factories, I was impressed by the fact that most of the yards seem to be operated on lines which must have been followed by the forefathers of the present owners. It is pleasing to note, however, that the spirit of progressiveness appears to be prevailing, to some extent at the present time, and there is now a movement on foot for the establishment of a ceramic school. Such men as

Mr. Montgomery, publisher of the "British Clay Worker," and a number of prominent members of the British Clay Workers' Institute, are men of the progressive type and their influence is gradually awakening the members of the clay industry to the possibilities in developing the clay products business. One notable feature in which the English have gone away ahead of the Americans, is in their pro-



The Famous London Bridge, Which Seems To Be Far From Falling Down, Even Though It Is Built of Stone.

motion of their interests through the holding of bi-annual clay products shows. The last show which was fully reported in "Brick and Clay Record," was a most successful event, and a large number of brick manufacturers as well as the manufacturers of other forms of clay products showed exhibits of their products, arranged in the most artistic manner, some very beautiful effects being produced through the building of small structures, which demonstrated in the best possible manner the beauty and merit of burned clay. It is a noteworthy fact that these shows have become so popular and have proved so profitable to the clay products men that it is no longer necessary to solicit the trade for exhibits, the available space all being reported taken up in advance. Individual manufacturers of brick, tile and other clay products consider the money expended for exhibits at these shows as a most profitable investment and are entirely satisfied with the practical results secured.

London Streets.

It is remarkable to note that brick as a street paving material is practically unknown in England. This is true, notwithstanding the fact that there is one street in London which has been paved with brick for many years and which has given entirely satisfactory results. Either the brick men have failed to see their opportunity in developing this line of clay products or asphalt, wood block, granite block and the macadam interests have such a strong grasp upon the situation that there is no room for the brick men. Mr. Montgomery has a number of times endeavored to interest English brick makers in this proposition but they have as yet failed to become enthusiastic, although it appears that some of them have recently been investigating the subject.

The thought occurred to me, in traveling the London streets, that our English friends would certainly be much astonished could they visit our fair city of Cleveland and many other American cities and note the magnificent results secured from brick as a paving material, when streets are constructed in a proper manner. The expense of maintaining the English asphalt and wood block streets under the heavy traffic which they endure must be something

enormous. Brick would certainly offer a large economy to the municipal authorities of London.

The Great Doulton Works.

The name Doulton is famous the whole world over. It is here that the famous Doulton pottery is made and these works have been in operation for centuries, the name being identified with all that is good and beautiful in pottery ware.

The present Doulton Works, however, are by no means confined to the manufacture of pottery. They turn out a very superior quality of sewer pipe and roofing tile. One of the most famous products of the Doulton works is their carrara ware, which is a form of glazed terra cotta, resembling the famous carrara marble, and this ware is largely used for exterior wall facings and decorative effects.

The Savoy Hotel, one of London's largest hostleries, is faced with this beautiful material and is a building of great architectural beauty.

My visit to the Doulton works was entirely on the outside, simply because the management is decidedly exclusive, not only toward foreign visitors but toward the English clayworkers as well and it is difficult if not impossible to get permission to view the interior of the works. Just why the management of this great institution is so secretive about their processes, no one can fully understand, but it is supposed that they fear the imitation of their famous carrara ware if outsiders are allowed to learn its process of manufacture. Doubtless the plant and equipment are fully up-to-date as is evidenced by the high quality of the products which they turn out.



Novel London Street Scene—Mendicant Side-Walk Artist.

Notwithstanding that a view of the interior of the works was impossible, it was a real pleasure to see the exterior of these famous buildings and any clayworker can well be proud of them as an evidence of the importance and extent of the clay industry. The works are situated on the banks of the Thames, opposite the Houses of Parliament and are magnificent examples of brick and terra cotta construction, and as will be seen by the illustrations, are of great architectural beauty and merit. The build-

ings cover an area of considerable extent and from the exterior appearance the visitor would imagine that they were important public buildings instead of housing a clay manufacturing enterprise.

In fact, I was impressed several times during my trip

This crosses the Thames River in the older part of the city and, as will be seen by the picture, carries a large amount of traffic.

The Hotel Cecil, so popular with Americans visiting England, is a beautiful example of brick construction. It



Famous Hotel Cecil on the Thames Embankment—A Fine Example of Brick Architecture.

abroad by the fact that our foreign brethren appear to show much more pride than we do in the housing of their clay plants, this being particularly true in Germany. The raw material used at the Doulton Works is largely shipped in by boats on the Thames River, the clays being secured from distant points.

Another pottery plant of some note, adjacent to the Doulton Works, is that of James Stiff & Sons, Ltd.

Some London Sights.

Many of the great public buildings of London are of stone construction and, therefore, not of particular in-

terest to our readers except in a general way. However, I cannot complete my notes on my pleasant sojourn in the "city of fog," without some mention of my general impressions of the greatest city in the world. I greatly enjoyed visits to some of the famous points of interest and brought home pictures of some of these places of note to show to "Brick and Clay Record's" readers. Among these are the London bridge, famous in poetry and song.

is situated on the bank of the Thames River, facing the Strand, which is one of London's most important thoroughfares. Perhaps the greatest of all London buildings are the Houses of Parliament, so beautifully illustrated in the accompanying engraving. Parliament was not in session while I was there so I had no opportunity of watching the methods of the English law makers. In this connection, however, I am reminded that our good friend, Mr. Montgomery, is an ex-member of Parliament and has been more or less prominent in English politics.



Where English Law Is Made—Famous Houses of Parliament.

terest to our readers except in a general way. However, I cannot complete my notes on my pleasant sojourn in the "city of fog," without some mention of my general impressions of the greatest city in the world. I greatly enjoyed visits to some of the famous points of interest and brought home pictures of some of these places of note to show to "Brick and Clay Record's" readers. Among these are the London bridge, famous in poetry and song.

All lovers of Dickens will enjoy seeing the picture of the "Old Curiosity Shop," which is the veritable building on which was based the story told in this famous book. A very good idea of the appearance of London streets may be gained from the illustration of the Strand and Charing Cross. Most of the buildings in sight are of brick construction, noticeable among them being the Charing Cross Hotel and Station, a handsome building

faced with a fine quality of red brick. A view of considerable interest is that of the West Minster bridge with St. Thomas Hospital in the distance, on the further bank of the Thames River. This illustration shows the style of most of the surface cars, which are double-deck, clumsy looking affairs but decidedly commodious. A trip on the upper deck of one of these cars affords an excellent view of London's thoroughfares. Most of one's traveling around London, however, is done in omnibuses, cabs or taxicabs, the rate being so low that as a rule it is cheaper to ride than it is to walk. One can ride a mile in a taxicab for 16 cents and a whole afternoon's use of an automobile can be had for about what it would cost to ride for an hour in Chicago.

EXHIBIT BUILDING TILE AT FAIR.

Concerning hollow building tile, J. J. Hinde, president of the Hinde Brick & Tile Co., of Sandusky, O., says:

"Builders are coming to realize the importance of fire-proof building material more and more and in modern construction much hollow tile is used not merely from the fact that it is fire-proof but because it can be used cheaper than wood and is more durable. It is not a new product but is now being appreciated by builders. When wood was plenty and cheap, there was no need of a substitute, but the best authorities agree that even with the present efforts to conserve the forests of this country they cannot last more than 40 years and in all probability not more than 25 years.

"In most of the building in Sandusky, which is now being done, hollow ware has a place. We have erected at the Erie county fair grounds a small building which will demonstrate the availability of hollow ware for use in the construction of buildings. It will be used as the secretary's office and will be our exhibit at the fair. This building will show the finished product with the smooth surface, and it will be demonstrated that it is not only good for inner walls but can be used as freely as brick for outer walls of a building.

"The ware which is now being manufactured can be used either with the smooth surface which needs no plaster covering or with the corrugated surface which permits of the use of plaster and which has proven more successful than even the steel lath. The plaster adheres to the tile corrugated surface and becomes really a part of the block thus averting the danger of the plaster cracking."

ADVERTISING BRINGS RESULTS.

In its "Weekly Bulletin," the Building Brick Association states that at the directors' meeting on September 18th, Mr. Moulding of Chicago reported that through the influence of the Association and its literature he has recently been able to convert two large speculative builders from the use of wood and cement to brick, these parties stating that they will hereafter use nothing but brick in their work. This will mean a great many brick houses which have been created through the influence of this Association by one of its members.

The following from the Standard Brick Co., Evansville, Ind., also appears in the "Bulletin."

"Relative to the fine business we are doing in Evansville, we may state that our city has enjoyed quite an industrial boom during the past twelve months, and besides we had quite a disastrous fire the early part of the year which necessitated an unusually large number of new buildings. The fact that brick has been the almost universal material used we certainly attribute to the persistent advertising and publicity campaign which we have carried on during the past few years. We have kept

brick constantly before the people and before the architects and naturally when a new building was proposed all parties concerned had their mind on brick and it was only a question of what kind of brick would be used."

The number of inquiries constantly being received by the Building Brick Association is ample evidence of the effect which is being produced on the general public by the advertising methods of this Association.

NEW WASHINGTON PLANT.

The following appeared in the "Bellingham, Wash., Herald," of Sept. 24th, relative to the new pressed brick plant of the Coast Clay Co.:

"With no less than twenty-five men employed at present and every indication that this force will be more than doubled in the course of a few weeks more, the Coast Clay Co., operating a big brick plant in the building formerly occupied by the Industrial Iron Works, near the Great Northern depot, on the south side, has now actually commenced business. The kiln, which has been under construction for some time past, is being filled with pressed brick to the number of 85,000.

"Workmen are now engaged in constructing a second kiln, adjoining the one already in use, that will have a capacity of 90,000. A German expert from Portland, Ore., who has been with the company for the past three weeks, states positively that the Coast Clay Co. is using the finest kind of shale he has ever had occasion to examine, and that it makes a class of brick second to none in the world.

"The machine installed for the manufacture of this pressed brick has a capacity of 1,000 an hour. The pressure under which these brick have to pass before going into the kiln is 18,000 pounds to the square inch, and a great deal of the time nineteen brick are turned out each minute. The machine being used is known as the Boyd press, and is among the best of the kind manufactured anywhere in the world.

"The company has already received orders for all the brick it can make for some time to come and it is now indicated that when the busy building season opens in the spring, this particular section of South Bellingham will be one of the busiest on the coast."

RICH CLAY DEPOSITS.

Recent research has revealed the fact that no other part of Pennsylvania is richer in mineral resources than the Johnstown district.

In a bulletin recently issued by the Government, the following is found concerning the clay resources found in the Johnstown territory:

"The clay industry of that region is of great importance. Some of the most valuable clay of the area is associated with the coal just underlying it. Thus coal and clay-working operations may be carried on in the same mine. It happens that one of the best of the coals is underlain by one of the thickest and most valuable of clays.

"A brick plant has thus been established at a mine mouth, the clay manufactured into brick, and the associated coal used in burning the brick. Such a combination in a plant, of which there are a number in this area, is almost ideal for turning out a high-grade product at the least possible cost."

TO VOTE ON ROAD PAVING.

The voters of Danville township, near Danville, Ill., will have an opportunity next April to vote upon a proposition to pave three miles of the Georgetown road with brick. The estimated cost is \$20,000.

PROGRESS OF THE INDUSTRY

The new Government statistics show a pronounced gain in the total annual production of clay products of the United States, many lines showing pronounced development. A substantial gain is shown in the production of drain tile, sewer pipe and refractories. Pottery also shows a satisfactory increase. The total clay production, for the year, is over one hundred and seventy million dollars.

The statistics of the United States for 1910, have just been completed by Mr. Jefferson Middleton, statistician of the Division of Mineral Resources of the United States Geological Survey. The figures show a very substantial and satisfactory increase in the total production of clay products and gains in many of the subdivisions of the industry. The total production for 1910 shows a valuation of \$170,115,974, a gain of nearly four million dollars over that of 1909, when we produced clay products to the value of \$166,321,213. To any who has doubts as to the certain growth of this industry or who is inclined to croak hard times, we would refer him to the following table of total clay production of the United States for the past several years:

1899.....	\$ 95,797,370
1900.....	96,212,345
1901.....	110,211,587
1902.....	122,169,531
1903.....	131,062,421
1904.....	131,023,248
1905.....	149,697,188
1906.....	161,032,722
1907.....	158,942,369
1908.....	133,197,762
1909.....	166,321,213
1910.....	170,115,974

This is an increase of nearly fifty percent in twelve years and we doubt if there is any other of our great industries which shows a more substantial and regular increase in development and importance.

The figures for 1910 show that Ohio leads as the banner clay working state of the Union with a production valued at over \$31,000,000. Pennsylvania is second in importance as a clay working state, New Jersey third, Illinois fourth, New York fifth, Indiana sixth, Missouri seventh and Iowa ranks eighth in the value of its annual clay products. This order shows a surprising change as compared with the year 1909, Ohio having passed Pennsylvania as the largest producer of clay ware. In 1909 Pennsylvania ranked first and Ohio second. This result was brought about through the fact that although Pennsylvania's production increased nearly three million dollars last year, yet Ohio's production of clay products shows an increase of almost fifty per cent, the report for 1909, showing production valued at \$16,929,883 while in 1910, Ohio is reported to have produced clay products to the value of \$31,525,948.

New Jersey has also taken a remarkable jump from fifth place to third place on the list, its production having increased in value from nine million dollars in 1909 to nearly eighteen million dollars in 1910.

Illinois, though dropping from third to fourth place, still shows a practical increase of two million dollars in annual production.

New York, though dropping from fourth place to fifth also shows a substantial gain of nearly two million dollars.

The remarkable increase in annual production in the states of Ohio and New Jersey, during 1910, are unexplainable and we would be glad to have some of our readers give us their opinion as to the explanation of this remarkable condition. There has been no increase in the number of operating plants which would account for the stupendous increase in production. The figures, however, without question, show that the clay industry in those

two states is in a most prosperous and encouraging condition.

The large increases, in the states mentioned, more than account for the total increase in the annual production in the United States and we must, therefore, expect to find substantial losses in production in other sections of the country. A study of the figures shows that this loss is certainly not in the state of Texas, where the total production increased a million dollars. It was not in Missouri, where the production was equal to that of the previous year. It was not in Indiana, where there was an increase in production of nearly a million and a half dollars. We do find, however, slight losses in the annual production in Colorado, Michigan, West Virginia and several other states, particularly in Iowa, where the production for 1910 was nearly a million dollars less than for the previous year.

The largest slump in value appears to have been in the manufacture of common brick. The total value of this brick, for 1910, was estimated at two million dollars less than in 1909. In fact, however, this figure shows a greater profit in the common brick business, as the production of common brick was decreased to the extent of a half billion, bringing the average price up to \$5.99 per thousand in 1909.

The production of vitrified brick or block was curtailed in 1910 as compared with the previous year, although the value of the product is about the same, the result showing a higher average selling price of \$11.37 per thousand.

Notwithstanding that conditions were not altogether favorable in 1910, the value of our annual production of agricultural drain tile increased from \$9,799,158 to \$10,389,822.

The value of our annual production of vitrified sewer pipe also increased over a million dollars, the total for 1910 being \$11,428,696.

The continued growth of the fireproofing industry is shown by the substantial gain which this product makes each year in total valuation, the figure for 1910 being \$5,110,597.

Fire brick made a very satisfactory jump upwards in 1910, the total production being valued at \$18,111,474 as against \$16,620,695 in the year 1909.

The 1909 statistics are somewhat discouraging to the pottery industry but the large gain made during 1910 evidences the fact that this important branch of the industry is continuing to grow and prosper. The total valuation of pottery products for 1910, was \$33,784,678, a gain of nearly four million dollars over 1909. It is to be noted that the pottery industry in value of production constitutes nearly 20 per cent of the total valuation of all the clay products of the country.

In the production of common brick, New York state seems to have had the advantage over Illinois, in 1910, producing 1,380,084,000 as compared with 1,196,526,000 made in Illinois. In value of products, however, the figures for the two states are almost identical, showing that the Illinois product brought a slightly higher average price, \$5.76 per M as compared with \$5.00 in New York state.

Ohio continues to lead as the largest producer of paving block, having turned out nearly 290,000,000 in 1910. It may be a surprise to some to learn that Kansas ranks second as the producer of paving brick, having made 118,950,000 in 1910.

In the production of drain tile, Iowa continues to head the list, showing an annual production valued at \$3,337,851. Indiana ranks second, with a production of drain tile valued at over two million dollars.

CLAY PRODUCTION IN THE UNITED STATES FOR

STATE.	RANK.	COMMON BRICK.			VITRIFIED BRICK OR BLOCK.			FRONT BRICK.			FANCY OR ORNAMENTAL BRICK. (Value.)	DRAINTILE. (Value.)	SEWER PIPE. (Value.)
		Quantity. (Thousands.)	Value.	Average price per thousand.	Quantity. (Thousands.)	Value.	Average price per thousand.	Quantity. (Thousands.)	Value.	Average price per thousand.			
Alabama.....	22	135,785	\$746,961	\$5.50	19,772	\$236,516	\$11.96	(b)	(b)	\$15.96		\$3,773	(b)
Arizona.....	44	12,740	115,977	9.10				(b)	(b)	20.00			
Arkansas.....	34	87,583	466,707	6.91	(b)	(b)	10.71	(b)	(b)	11.02		4,258	
California.....	9	280,265	1,694,312	6.05	8,538	140,130	16.41	11,475	\$285,468	24.88	\$48,572	55,386	\$1,031,061
Colorado.....	17	128,711	852,986	8.63	(b)	(b)	14.15	30,334	368,538	12.15	(b)	18,066	(b)
Conn. and Rhode Island...	23	240,234	1,454,471	6.05	(b)	(b)	14.62	(b)	(b)	15.75	(b)		
Delaware.....	42	21,940	174,139	7.94				(b)	(b)	19.49	(b)	(b)	
District of Columbia.....	39 ^c	28,494	202,136	7.09								(b)	(b)
Florida.....	40	42,195	234,524	5.56								(b)	
Georgia.....	15	305,025	1,620,174	5.31	(b)	(b)	11.11	13,649	129,393	9.48	(b)	8,920	373,387
Idaho and Nevada.....	38	39,271	322,862	8.22	(b)	(b)	25.00	675	13,850	20.52		(b)	
Illinois.....	4	1,196,526	6,896,836	5.76	115,903	1,415,355	12.21	22,138	274,699	12.41	10,875	1,613,698	538,633
Indiana.....	6	234,297	1,402,154	5.98	61,034	882,888	11.19	46,691	478,627	10.25	(b)	2,071,564	406,543
Iowa.....	8	149,914	1,088,266	7.26	19,887	239,283	12.03	8,142	103,276	12.68		3,337,851	313,430
Kansas.....	13	218,353	922,940	4.22	118,950	1,089,978	9.16	25,814	223,875	8.87	(b)	50,726	(b)
Kentucky.....	14	115,890	743,732	6.42	(b)	(b)	12.74	10,238	99,532	9.72	(b)	66,217	(b)
Louisiana.....	38	80,555	502,330	6.24				(b)	(b)	10.55		(b)	
Maine.....	33	54,641	367,903	6.73	(b)	(b)	25.02	(b)	(b)	10.76		(b)	(b)
Maryland.....	19	164,795	1,051,381	6.38	(b)	(b)	16.96	260	3,953	15.20	(b)	5,899	
Massachusetts.....	21	165,315	1,120,924	6.78				(b)	(b)	15.44			
Michigan.....	16	232,551	1,363,316	5.88	9,080	116,446	12.82	2,209	27,533	12.46		348,205	(b)
Minnesota.....	18	182,895	1,104,898	8.04				7,240	88,000	12.15		160,708	(b)
Mississippi.....	32	91,065	527,981	5.80				1,431	15,963	11.18		68,065	
Missouri.....	7	201,281	1,284,997	6.38	56,703	647,441	11.42	38,428	516,505	13.44	23,873	121,068	1,210,348
Montana.....	37	26,124	254,282	9.73	(b)	(b)	20.00	344	6,146	17.87		(b)	(b)
Nebraska.....	27	119,017	791,351	8.65	(b)	(b)	8.88	(b)	(b)	16.00		(b)	
New Hampshire.....	35	77,567	566,121	7.30									
New Jersey.....	3	401,103	2,215,628	5.52				47,451	609,845	12.85	(b)	23,147	(b)
New Mexico.....	43	7,929	63,703	8.03	(b)	(b)	12.06	2,749	32,977	12.00			
New York.....	5	1,380,084	6,897,438	5.00	21,662	334,432	15.44	9,229	137,748	14.93	(b)	272,836	136,576
North Carolina.....	25	167,966	1,039,319	6.19				550	5,800	10.55		9,555	(b)
North Dakota.....	41	17,941	140,862	7.85				4,642	77,808	16.76			
Ohio.....	1	409,773	2,507,742	8.12	289,817	2,876,157	9.92	134,759	1,489,094	11.05	32,995	1,869,823	3,289,537
Oklahoma.....	28	131,146	763,236	5.82	11,959	114,315	9.56	2,682	35,288	13.18			
Oregon.....	29	58,588	482,333	8.23				5,580	137,040	24.56		51,516	(b)
Pennsylvania.....	2	828,703	5,371,707	6.48	101,330	1,204,724	11.89	171,415	2,001,967	11.68	35,768	11,480	583,418
Porto Rico.....	48	2,915	25,109	8.61							(b)		
South Carolina.....	31	115,128	657,801	5.71				(b)	(b)	14.20		(b)	
South Dakota.....	46	6,050	57,150	9.45				(b)	(b)	11.20	(b)		
Tennessee.....	24	140,878	826,533	5.87	(b)	(b)	10.80	10,119	98,450	9.73	(b)	29,707	(b)
Texas.....	12	271,640	1,779,062	6.55	(b)	(b)	13.67	21,646	325,074	15.02		18,408	(b)
Utah.....	30	54,537	411,415	7.54	(b)	(b)	24.18	19,220	250,263	13.02		7,758	(b)
Vermont.....	45	9,633	58,766	6.10								(b)	
Virginia.....	20	229,982	1,460,460	6.35				20,813	294,348	14.14	(b)	5,276	(b)
Washington.....	11	130,634	956,510	7.32	(b)	(b)	18.87	5,570	124,952	22.43		34,128	817,086
West Virginia.....	10	77,916	508,422	6.53	46,098	564,578	12.25	(b)	(b)	10.00		2,330	(b)
Wisconsin.....	26	161,083	1,071,457	6.65				2,400	29,900	12.46	(b)	64,391	
Wyoming.....	47	4,859	50,237	10.34									
Other States ^d					87,267	1,342,423	15.38	19,964	304,145	15.23	27,622	55,065	2,728,677
United States.....		9,221,517	55,219,551	5.99	968,000	11,004,666	11.37	697,857	8,590,057	12.31	9 1,011,730	10,389,822	11,428,696
Percentage of total.....			32.46			6.47			5.05		.60	6.11	6.72
Total, 1909.....		9,791,870	57,251,115	5.85	1,023,654	11,269,586	11.01	816,164	9,712,219	11.90	1 1,167,975	9,799,158	10,322,324

^a Including adobes, aquarium ornaments, burnt clay ballast, charcoal furnaces, chimney pipe and tops, conduits, crucibles, curbing, flue lining, gas logs, glasshouse supplies, glazed brick, grave markers, muffles, radial chimney brick, retorts, saggars, scorifiers, stone pumps, vases and ornaments, and wall coping.
^b Included in "Other States."

^c Made by Connecticut alone, and included in "Other States."
^d Includes all products made by less than three producers in one State.
^e The total of "Other States" is distributed among the States to which it belongs in order that they may be fully represented in the totals.

1910 WITH CORRESPONDING TOTALS FOR 1909

ARCHI- TECTURAL TERRA COTTA. (Value.)	FIRE- PROOFING. (Value.)	TILE, NOT DRAIN. (Value.)	STOVE LINING (Value.)	FIRE BRICK.			MISCELLA- NEOUS, ^a (Value.)	TOTAL BRICK AND TILE. (Value.)	POTTERY. (Value.)	TOTAL. (Value.)	PER- CENTAGE OF TOTAL.	STATE.
				Quantity. (Thousands.)	Value.	Average price per thousand.						
	(b)			10,365	\$163,672	\$15.79	\$22,269	\$1,645,313	\$22,246	\$1,667,559	.98	Alabama.
								128,777		126,777	.08	Arizona.
				(b)	(b)	12.42		550,105	28,350	578,455	.34	Arkansas.
\$678,249	\$151,503	\$97,685	(b)	15,416	371,017	24.07	90,754	4,744,968	97,423	4,842,391	2.85	California.
	32,565	(b)		9,280	205,550	22.15	95,639	1,982,827	50,887	2,033,714	1.20	Colorado.
			(b)	(b)	(b)	22.00		1,568,486	(c)	1,568,486	.92	Conn. and Rhode Island.
								216,555		216,555	.13	Delaware.
								242,531	(b)	242,861	.14	District of Columbia.
				(b)	(b)	15.00		237,268		237,268	.14	Florida.
(b)	19,354	51,800		3,482	67,622	19.42	10,490	2,510,740	21,298	2,532,038	1.49	Georgia.
				(b)	(b)	21.82		347,437		347,437	.20	Idaho and Nevada.
1,680,438	552,905	(b)		20,179	368,730	18.27	44,730	14,331,414	844,747	15,176,161	8.92	Illinois.
(b)	466,877	622,726	(b)	10,182	166,217	16.32	540,151	7,143,306	956,704	8,100,010	4.76	Indiana.
	200,965			(b)	(b)	18.00	27,185	5,310,706	17,535	5,328,241	3.13	Iowa.
(b)	(b)	(b)					81,040	2,661,527	(b)	2,661,527	1.57	Kansas.
	(b)	818,966		56,041	955,557	17.05	2,000	2,418,116	149,421	2,567,537	1.51	Kentucky.
							27,479	546,873	(b)	546,873	.32	Louisiana.
				(b)	(b)	25.00		599,881	(b)	599,881	.35	Maine.
(b)			\$23,067	15,559	296,541	19.06		1,614,348	233,925	1,848,273	1.09	Maryland.
	(b)	(b)	166,018	1,999	71,780	35.91		1,469,018	238,395	1,707,413	1.00	Massachusetts.
		(b)	(b)				(b)	2,083,525	112,697	2,196,222	1.29	Michigan.
	93,731			(b)	(b)	15.11		1,901,296	(b)	1,901,296	1.12	Minnesota.
							(b)	613,009	19,990	632,999	.37	Mississippi.
(b)	146,931	(b)	(b)	91,444	2,059,845	22.53	214,447	7,058,705	29,061	7,087,766	4.17	Missouri.
	(b)	(b)		2,121	43,671	20.59		411,824	(b)	411,824	.24	Montana.
	(b)						(b)	938,827		938,827	.55	Nebraska.
								566,121	(b)	566,121	.33	New Hampshire.
2,000,039	1,582,101	1,199,113	(b)	42,394	1,001,063	23.61	294,135	9,245,854	8,588,455	17,834,309	10.48	New Jersey.
	(b)	(b)		533	12,183	22.86		129,275	(b)	129,275	.08	New Mexico.
1,108,371	210,954	72,815	86,248	14,190	514,990	36.29	5,160	9,778,288	2,093,661	11,871,949	6.98	New York.
	(b)						1,000	1,208,674	14,990	1,223,664	.72	North Carolina.
				(b)	(b)	30.19		227,455		227,455	.13	North Dakota.
	934,960	1,896,572	(b)	116,784	1,709,039	14.63	587,909	17,231,236	14,294,712	31,525,948	18.53	Ohio.
							8,082	920,921		920,921	.54	Oklahoma.
	(b)	(b)		(b)	(b)	30.00		876,632	(b)	876,632	.52	Oregon.
472,150	300,187	413,047	132,567	346,423	6,454,928	18.63	563,563	19,814,355	2,279,930	22,094,285	12.99	Pennsylvania.
	(b)	(b)						27,773	(b)	27,773	.02	Porto Rico.
				(b)	(b)	13.96		696,600	7,990	704,590	.41	South Carolina.
								71,200		71,200	.04	South Dakota.
	(b)			1,287	14,907	11.58		1,205,108	209,180	1,414,288	.83	Tennessee.
	(b)			5,751	75,950	13.21	31,037	2,744,845	119,085	2,863,930	1.68	Texas.
	(b)			(b)	(b)	30.12	3,756	864,258	(b)	864,258	.51	Utah.
			(b)					89,253		89,253	.05	Vermont.
				(b)	(b)	14.48		1,793,270	46,417	1,839,687	1.08	Virginia.
198,358	114,501			672	25,017	37.23	25,318	3,023,854	(b)	3,023,854	1.78	Washington.
	(b)	104,633		2,184	33,003	14.65		1,322,457	2,675,588	3,998,045	2.35	West Virginia.
							2,000	1,167,918	8,965	1,176,883	.69	Wisconsin.
								50,237		50,237	.03	Wyoming.
839,166	303,063	463,287	95,906	10,144	212,164	20.92	65,332	(c)	/ 623,026	/ 623,026	.37	Other States.
6,976,771	5,110,597	5,240,644	503,806	^h 922,209	^h 18,111,474	19.09	2,743,482	ⁱ 136,331,296	33,784,678	170,115,974	100.00	United States.
4.10	3.01	3.08	.30	.....	10.64	.....	1.61	80.15	19.85	100.00		Percentage of total.
6,251,625	4,466,708	5,291,963	423,583	838,167	16,620,695	19.83	2,694,821	135,271,772	31,049,441	166,321,213		Total, 1909.

^f Undistributed pottery products.

^g Including enameled brick valued at \$832,225, made in the following states: California, Illinois, Maryland, Missouri, New Jersey, and Pennsylvania.

^h In the total quantity and total value of fire brick are included, respectively, 145,779,000 silica brick, valued at \$3,289,028, of which 112,033,000, valued at \$2,231,063, was produced by

Pennsylvania, and the remainder, 33,746,000, valued at \$1,057,965, by Alabama, Colorado, Georgia, Illinois, Indiana, Missouri, and Montana.

ⁱ Including enameled brick valued at \$993,902, made in the following States: California, Illinois, Maryland, Missouri, New Jersey, and Pennsylvania.

REMARKABLE INVESTMENT PROPOSITION.

More than passing interest is shown in the publication in the "Financial World" of New York, Aug. 26, of a report concerning the formation, sale of securities, etc., of the One Hundred Per Cent Brick Co., the securing of a charter for which was recently mentioned in "Brick and Clay Record."

Concerning the new brick company the "Financial World" relates:

"If bargains could be made through promises, investors would not have to search for them any farther than Philadelphia. In the "City of Brotherly Love" an investment proposition has been worked out by William D. Beam, formerly of Kansas City, which guarantees the investors at least a minimum income of 10 per cent every year. Also, according to Beam, the principal is absolutely safeguarded from loss through special provisions, his genius has been able to provide.

"As such opportunities constitute a *rara avis* in the garden of investments, they deserve looking into and we have been doing this for the last few weeks. Beam's company is the One Hundred Per Cent Brick Co. It has an authorized bonded debt of \$3,000,000 and a stock capital of \$5,500,000, all in common stock of a par value of \$1.00 per share. Beam offers for private subscription \$2,750,000 of these bonds and with each bond an equal amount of stock, as a bonus. Interest of 5 per cent is guaranteed on these bonds for four years by a certificate of deposit issued by the First Mortgage & Guaranty Co., which is the bank at the head of which is ex-Secretary of the Treasury Leslie M. Shaw, who was also at one time the president of the Carnegie Trust Co. of New York City, now defunct. Shaw's bank also issues a trust certificate as a further protection for the safety of the bonds, which are supposed to return every dollar invested in them at the end of twenty years in the event the One Hundred Per Cent Brick Co. should have defaulted on the payment of interest or principal. The interest is only guaranteed for four years.

"According to Beam's description, no one can lose a dollar on the investment, a sterling security absolutely safeguarded against loss. It is a certain 10 per cent bond with the brightest prospects imaginable for the investor's income to be quintupled in a few years. This means a return of 50 per cent on the investment. Although this is too much to expect, there is still more offered in the prospect that the stock will reach a high market price.

"All this money is to be made out of so common a commodity as brick made out of kaolin. A few years ago kaolin was supposed to exist only in Texas. Now under the remarkable imagination of Beam, enough has been found in the bosom of Mother Earth right close to Harrisburg, Pa., to assure an income of at least \$6,600,000 annually to the One Hundred Per Cent Brick Co. by turning kaolin into white china, glazed brick and tiles.

"Notwithstanding all the wealth Beam says his brick company will produce, and all the safeguards with which he claims he has surrounded the scheme, the bonds and the stock are not an investment, but purely a speculation with no extraordinary features. Even the connection with Ex-Secretary Leslie M. Shaw's bank does not add any strength.

"Guaranteeing the principal against loss and a certain interest for a fixed term of years makes the proposition no better. That method of financing is not new, but on the contrary is very old.

"In acting as a guarantor for Beam's company, Shaw's

bank assumes no risks. A few years ago 'The Financial World' described how this guarantee scheme was worked, when a number of New Jersey and California institutions offered to act for any promoter, in a manner much as Shaw's bank agrees to act in the present instance. Most of these institutions have since gone out of existence. Their guaranteed certificates, held all over the country by investors, today possess no value whatever.

"The four years' interest on Beam's brick company's bonds secured by the certificate of deposit issued by Shaw's bank represents only the money Beam pays in out of the proceeds of the sale of the bonds. This amounts to \$20. The trust certificates guaranteeing the return of the principal, represent only the final sum which a certain amount of capital will reach at the end of 20 years, by compounding the interest, which capital is placed originally in the bank and allowed to accumulate. Here again Shaw's bank takes no risk. Should anything happen to Beam's company the bondholder would have to wait 20 years before his principal would be returned. In the meanwhile he would receive no interest.

"It must be clear then that the Brick Company is paying an exorbitant price to raise money. It must lay aside \$20 out of each \$100 bond for the four years' interest. It must also set apart a certain sum on which interest, compounded each year for 20 years, would at the end of this time come to the face value of the bond. All in all, how can the company realize more than \$50 on each \$100 bond for immediate development use?

"Our Philadelphia correspondent writes us that the company owns a small plant in none too good physical condition and one certainly not of a size to warrant any such load of capital as that with which the One Hundred Per Cent Brick Co. begins.

"Along the same financial lines, Beam is selling 20-year trust certificates in the Trinity Gold Dredging & Hydraulic Co., a California placer proposition.

"We have a circular letter in our records issued by Wm. D. Beam, June 5, 1908, dated Kansas City, Mo., offering at that time Trinity Guaranteed Certificates. At that time Beam said of the certificates:

"For sincerity, safety, assured income, large profits and as a friend if in need of money and as a guardian for the home and loved ones in the hour of death, it stands alone, pre-eminent in its superiority and grandeur. Those behind are the kind of men who protect their own and their homes, who have acquired the habit of aiding others to do the same.

"Poor Stephen Girard, who was in his age a great philanthropist, would if he were alive, envy the Utopian generosity of Wm. D. Beam. Such goodness of heart is worthy of a shrine, were it not so intermixed with sordid commercialism. Still it is best for those who might be thinking to protect their loved ones even in the hour of death, to consider well that gilt-edged investments need not be sacrificed to the extent of fifty cents on a dollar or thereabouts."

NEW KEOKUK FACE BRICK PLANT.

We have received further information regarding the plans of the recently organized Keokuk Brick Co., which will at once erect a plant for the manufacture of pressed brick and high grade red and buff face brick. The company is capitalized at \$50,000 with the following officers: F. W. Swan, president; Paul Pechstein, Jr., secretary-treasurer, and P. S. Hentel, manager. The plant will be located at the edge of the city limits on the C. B. & Q. R. R. Among the equipment which will be installed will be a four-mold Andrus brick press, Scott dry pan, mixer, screen, elevators, boilers, and a 120-h. p. engine. The kilns will be of the up draft type, oil being the fuel used.

MOTOR DRIVE FOR BRICK PLANT

Electric Motor-Drive for Brick Manufacturing Growing In Popularity, Although of Comparatively Recent Development

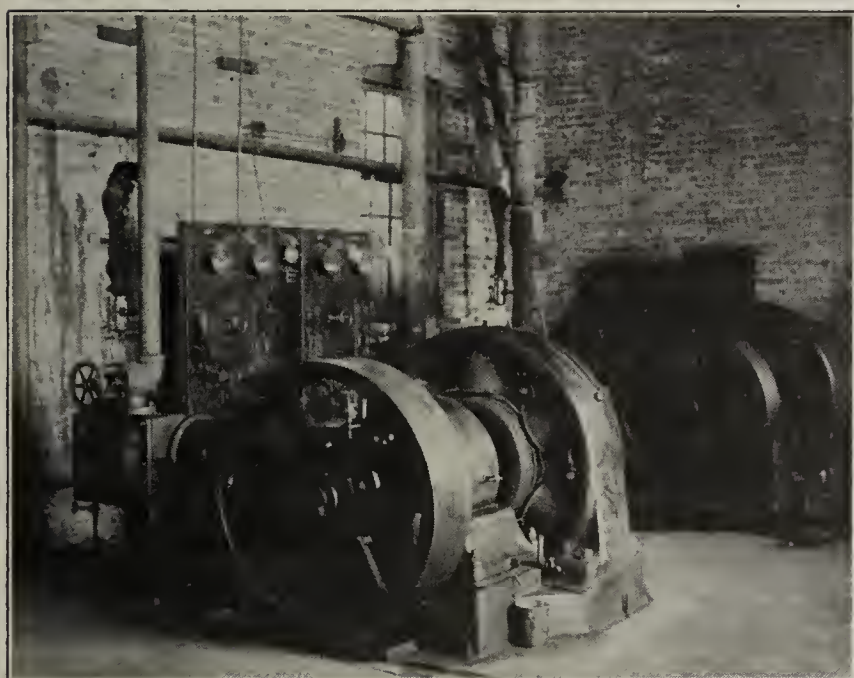
Since the use of electricity for brick manufacturing is becoming more popular each year, the following article, by Gordon Weaver, which appeared in the "Electrical World," will no doubt be of general interest to our readers:

The application of electric-motor drive to machinery used in the manufacture of brick presents a comparatively new and interesting field. As this is essentially a summer load, the business is particularly attractive from a central-station standpoint. The question of steam for heating purposes rarely, if ever, is presented, and where steam is used in the manufacture of brick it may be economically supplied at low pressure.

The power required to drive different machines varies considerably, depending largely upon the kind of clay used. For rough estimates it is fair to assume a connected load of 20 horsepower for each 10,000 brick capacity per day. In plants having a capacity of 20,000 per day or less, it rarely pays

shows the variation in a plant having a capacity of 90,000 brick per day, and also shows the effect that different kinds of clay have on the load-factor of two plants, each having a capacity of 20,000 brick per day. The load-factor in these diagrams is calculated on the basis of 720 hours per month and a five-minute demand.

When a central station broaches the subject of motor



Electric Generators at the National Brick Co.'s Plant, Maynard, Ind. Generator in Fore-ground Operates Machinery in Clay Pit, The Other operates the Penfield Setting Equipment.

to install more than one motor, as practically all the machines operate at the same time. Figs. 1 and 2 show part of the machinery of a brick plant belted to line shaft and operated by one motor. In large plants (i. e., over 20,000 capacity) diversified motor application is very practical and gives satisfactory and efficient service.

Machine.	Demand in Kilowatts.
Forty-inch disintegrator	50.4
Pug mill	44.
Wire-cut brick machine, 50,000 brick per day	64.
Four-mold dry press.....	6.

Where a number of motors are to be used the demands tabulated above, as found by actual test, may prove useful in the selection of the proper sizes of motor.

These demands are all in terms of the actual power required, the motor efficiency not being taken into account.

If it seems advisable to run the elevators by separate motors, the energy required to drive them may be easily calculated in foot-pounds. One cubic foot of clay weighs 125 pounds. The horsepower thus calculated will be about 50 per cent of that actually needed.

The monthly load-factor varies with the monthly output, capacity of the plant and the character of the clay. Fig. 3

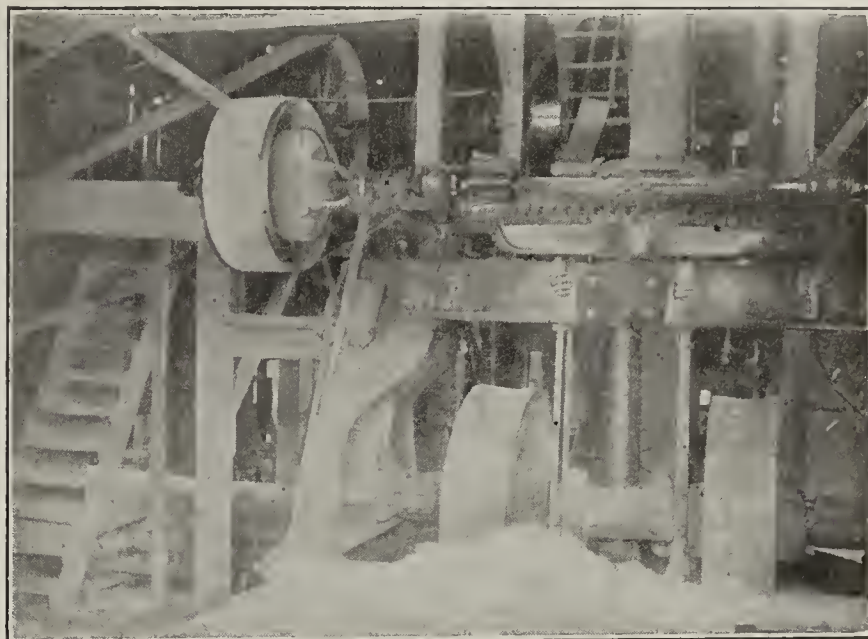


Fig. 2. Frost Dry Pan Belted to Line Shaft.

drive to a brick company that is operating by steam, the company will assert that steam is needed to heat the dies on the brick press. It is true that the dies must be heated, but there are three different ways whereby this is now being done, each of which has its advantages and will prove the most economical in some particular localities.

The first method, which logically suggests itself, is that of supplying steam from a small auxiliary boiler at low pressure. This is being done in quite a number of places and is proving very satisfactory. A boiler of this sort requires

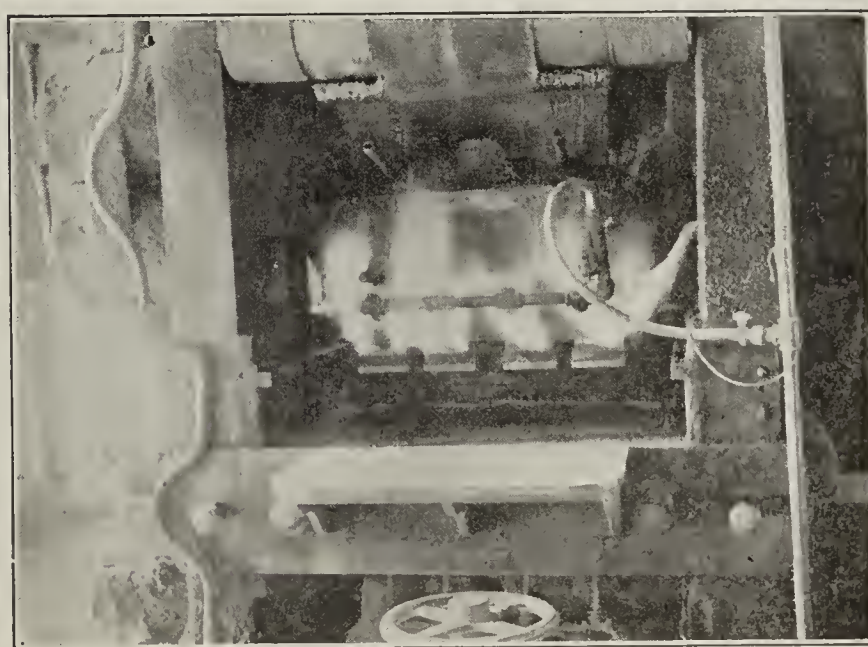


Fig. 4. Brick Press Having Dies Heated by Gasoline.

very little attention, as almost any workman around the place can do the little firing necessary. In a plant having a capacity of 20,000 brick per day about 50 pounds of coal will be used per day in heating the dies. The second method is to have the heat supplied by a gas flame coming in direct contact with the dies. Fig. 4 shows the arrangement of the gas pipes

on a four-mold dry press with the gas lighted and ready for operation. The gas actually used during one day in molding 18,000 brick was 600 cu. ft. The third method is to have the dies heated electrically. In at least one plant this is being done successfully, flatiron cartridge heaters being used

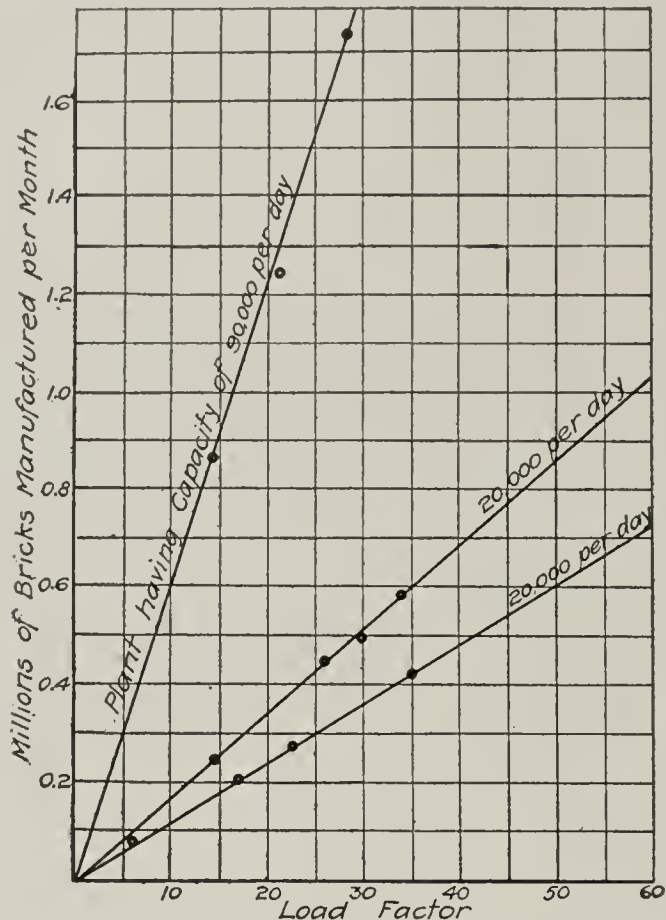


Fig. 3. Diagram Showing Variations in Load-Factor with Output.

on each die. The energy used on a four-mold dry press will be about 40 kw.-hours per day of ten hours.

Aside from the motors used in driving the machinery that makes the brick, motors are frequently used to drive a

BRICKMAKING DATA.

		Maximum Demand Kilowatts.	Kw. Hours Output.	Thousands of Brick.	Load- Factor, 24 Hours.
Plant having 90,000 capacity per day; connected load, 170 hp. (4 motors); 12.7 kw.-hours per 1,000 brick.	April	116	23,900	1,744	28.6
	May	107	19,900	1,636	825.
	June	96	16,250	1,249	23.5
	July	96.5	9,900	871	14.2
	August	88.24	13,290	1,025	20.9
Plant having 20,000 capacity per day; connected load, 50 hp. (1 motor); 14.8 kw.-hours per 1,000 brick.	March	25	4,980	336	27.8
	April	25	4,640	435	35.8
	May	25	6,310	426	35.0
	June	25	6,390	432	35.6
	July	25	4,060	274	22.5
	August	25	4,470	302	24.8
	September	25	4,190	282	23.3
	October	25	3,070	207	17.1
	November	25	1,070	76	5.9
	December	25	.....	....	...
	January	25	.....	....	...
	February	25	4,610	310	25.7
DRYING.					
Plant having a capacity of 90,000 per day; connected load, 50 hp. on drying system alone.	April	48.5	24,950	1,090	71.
	May	50.3	22,900	1,266	63.
	June	47.4	21,025	905	61.5
	July	43.7	10,175	380	32.3
	August	49.4	12,670	576	35.5

blower in connection with the drying system. The hot air is taken from the kilns which are cooling (in a large plant there is almost always a kiln in the process of cooling) and forced in through a drying-room where the brick are tempered before being put into the kiln for burning.

The accompanying tabulations will give some idea of the maximum demand, kw.-hour consumption, number of brick manufactured and the monthly load-factor.

CONTINUOUS GAS-FIRED KILNS SATISFACTORY.

There is a marked tendency among clay manufacturers to use large continuous kilns, thereby effecting a saving in fuel and labor. Five large Youngren continuous gas-fired kilns have recently been constructed at the following plants:

The Hocking Valley Products Co., Kachelmacher, O.; the Farmers' Co-operative Brick & Tile Works, Mason City, Ia.; W. P. Jones, Macon, Ga.; Little Falls Clay Co., Bayne, Wash., and the Knoxville Brick Co., of Knoxville, Tenn.

The total product of these five large kilns is approximately 325,000 standard size building brick daily, and the estimate is conservatively based.

This is truly a large output and marks another distinctive epoch in the era of progressive clay working.

In order that the full import of this great output may not be under-estimated we offer a few statistics, which may be interesting.

The daily product of these five Youngren kilns, placing each brick side by side, would cover an area of 11,050,000 square inches, or 76,806 square feet, or three city blocks.

If placed in an unbroken line, end to end, they would extend a distance of 43 miles. A railroad train, running at the rate of 30 miles an hour, would consume almost one and one-half hours' time in passing this line.

Again, these brick, closely stacked, would occupy 18,200 cubic feet of space.

Figuring on a basis of 400 lbs. coal consumption to the burning of a single brick, an amount of coal equal in bulk to the contents of an ordinary tin cup is required for the burning of three brick.

It will be seen, therefore, that in burning 100,000 brick, 40,000 lbs. of coal would be consumed. The capacity of an ordinary coal car is 100,000 lbs.; therefore, these five plants together will consume less than 11-3 cars of coal in their daily burn of 325,000 brick, or 65 tons. Estimating the cost of this coal at \$2.50 per ton, we have a daily fuel cost of \$162.50, an average of \$32.30 per plant, if all capacities were equal.

These kilns have all been thoroughly tried out and each and

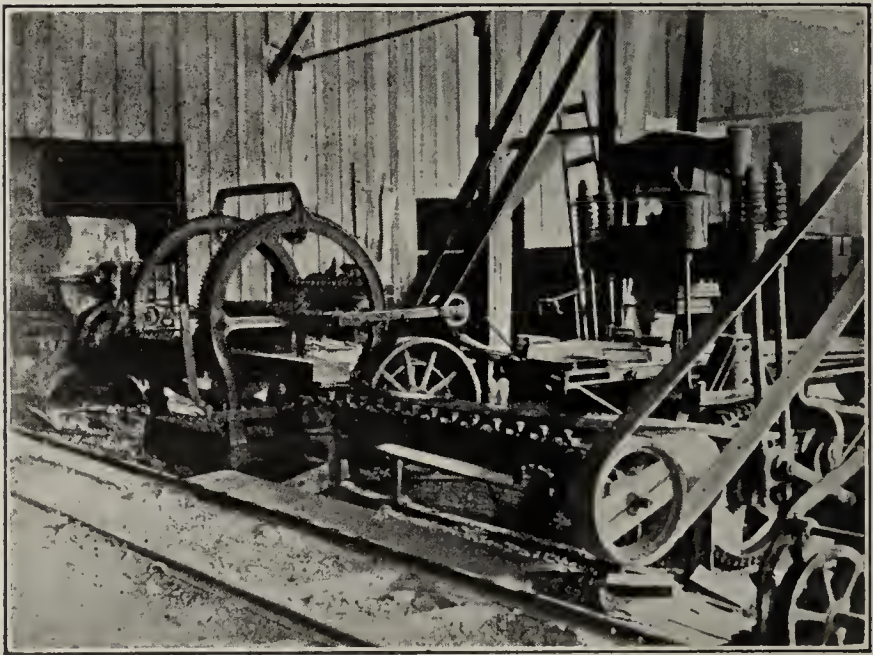


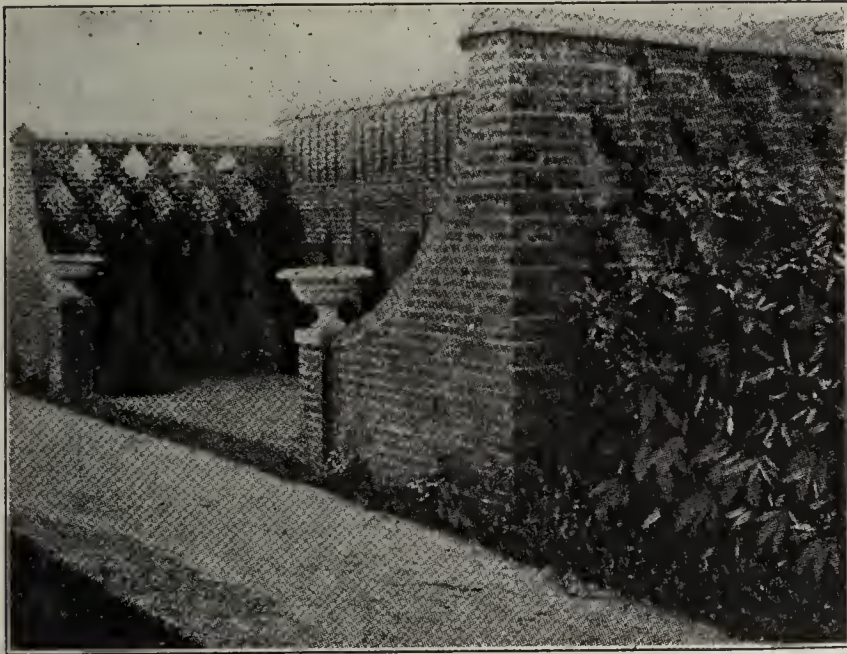
Fig. 1. Wire-Cut Brick Machine Belted to Line Shaft.

every one of them are working to the entire satisfaction of the various owners. In a letter, the Little Falls Fire Clay Co., Bayne, Wash., states: "The burned contents of our new kiln No. 18 were all shipped out to a strictly hard and red-burned job, the only loss being 159 brick, which were too soft for such a job, and 60 brick, which were broken into bats." They go on further to say, "W might add that kilns 2, 3, 4 and 5 are showing up just as hard burned brick."

NOTABLE BRICK FENCE.

That concrete has not yet succeeded in robbing brick of its birthright, preserved in all ages and most of the world's countries, is constantly being demonstrated. One of the latest and most marked instances of the employment of brick for combined utilitarian and ornamental purposes is seen in a handsome fence, perhaps wall is the most correct word, that surrounds the great subsurface area to the west of the Pennsylvania Railroad's great granite passenger station in New York City.

This interesting and attractive fence or wall, which is six and a half feet high, is built of light gray mottled brick set on a foot high granite base and having a solid heavy granite coping. To break what would



Attractive Work Made Possible by the use of Brick.

otherwise have been the monotony of such a fence, extending continuously for hundreds of feet, there are built in it, at regular intervals of about thirty feet, square posts of about a two-foot face projecting slightly beyond the face of the wall and carried up above the coping and crowned each with a granite cap; and further to relieve the wall's monotony certain courses in it have been laid with alternate brick slightly projecting, to give in the face of the wall, between the posts, the effect of paneling.

SPANISH TILE.

The National Mosaic Floor Tiling Co. has recently established a branch office in the Woodward building, Birmingham, Ala., in charge of M. J. Brennan, district manager.

The National Mosaic Flooring Co. has behind it a unique and rather remarkable history. It had its beginnings in Barcelona, which is still one of the three places in the world where this Spanish or sometimes called, Cuban tile, is made. Next, the company established a branch in Havana, from whence the United States got its first tiling, and later the American branch was set up in Mobile, in January, 1908.

The company owns a tract of ten acres in the southern part of Mobile, upon which modern buildings have been constructed, the main building of which is 165 by 330 feet, and has 25,000 square feet of floor space.

There are no Americans skilled in the making of this special tile, and the company imports all of its laborers from Cuba.

The company now has factories at Barcelona, Havana and Mobile, and branches at Atlanta and Birmingham.

BRICK VS. CEMENT FOR GARDEN WALKS.

The following comments appeared in a recent issue of the "Chicago Evening Post" and are of especial interest at this time, when the cement interests are endeavoring unceasingly to usurp the place rightfully belonging to "brick."

"Some time ago we quoted approvingly the statement of a Chicago landscape architect that walks in gardens should be of brick rather than of cement. Cement, we said, was too commercial and citified in appearance to be appropriate for such service. This mild observation, to our astonishment, drew the following unhumorous letter from the editor of the 'Cement Age:'

I have before me the clipping from your issue of June 27th, and that any individual may show a decided preference and bias toward brick is not surprising, but that a paper such as *The Post* should indorse what is, on the surface, a statement so definitely contrary to fact is surprising.

We are sending you for your files a copy of our May issue. Feeling sure that further investigation will revise your attitude in this matter, we are, etc.

"That a paper such as 'The Post' should take the stand it did is nothing to be amazed over. It is a matter of taste and the authorities are perfectly clear on it. If our zealous contemporary can find a single volume on landscape architecture which sanctions, even by implication, such use of concrete, he will have more of an argument than he has at present. Curiously enough, the May issue of the 'Cement Age,' which he sends us, in the only extended reference which it makes to the use of cement for country-house accessories, rather pointedly leaves out garden walks altogether.

Farm and garden accessories, such as barns, fence posts, walls, mangers, water troughs, seats and balustrades are all of concrete, and all other features wherever practical, but never where concrete would be less desirable than some substitute for it.

"The italics are ours, but the 'Cement Age' is welcome to the moral."

GRAVITY RAILROAD TO BE INSTALLED.

It is reported that the Atlas Building Material Co. of Roseton, N. Y., is to open a new clay bank about a half mile west of its yards and will construct a gravity railroad from the "pits" to the plant. The company of which Dr. Townsend is president, absorbed the old Bartlett



Garden Gateway, Tylney Hall, England.

Brick Co. sometime ago, since which time many improvements have been made at the yard. It is said that something like twenty cars will be placed in service which will be loaded at the banks, run by gravity to the yards and hauled back to the banks by horses. The Jova brick plant, which joins that of the Atlas Building Material Co. has a similar system which has been successfully operated for some time.

DENISON TILE FOR RESIDENCES

The Use of Hollow Tile for Wall Construction has Solved Many Problems, Assuring Ample Protection Against Dampness, Heat, Cold and Fire

One of the important uses for which the new Denison tile is being adopted is for residence construction work. Various forms of hollow block and terra cotta fireproofing have been used for such purposes, with good results, but the Denison tile seems to be an advanced step in important building construction and is especially suitable for the building of walls in isolated residences.

The advantages of hollow tile walls for houses are unquestioned. Such walls are absolutely damp-proof, the dead air space being entire protection against conduction of moisture. Such houses are much warmer in winter and cooler in summer than solid walls and thus largely reduce the cost of heating in winter. As explained in an article in the Oct. 15th issue of "Brick and Clay Record," Denison tile walls are distinctly load-bearing walls. In the city of Cleveland a commission of competent engineers was employed to test hollow tile and walls built of hollow tile. Based upon their

coated with stucco. The adhesion of portland cement plaster to the dense tile body, with its grooved surface, is perfect and enduring. This form of construction has become well established in the East, and is rapidly working westward.

Denison tile faced with brick makes good wall construction also, owing to the bonding facilities of the tile.

The dead air spaces, in Denison tile walls, are non-conductors of heat, cold, moisture and sound. These dead air spaces extend horizontally within the wall thus reducing to a minimum the circulation of air within the wall, rendering it non-conductive; also there are no mortar joints extending through the wall to carry moisture, as is the case with many other forms of construction.

The Ohio Clay Co., Schofield Bldg., Cleveland, O., controls the Denison tile patents and this company is now prepared to make arrangements for allotting territory for the manufacture of this tile in various parts of the United States



House Constructed of Denison Tile with Stucco Covering—Note the Attractive Tile Roof.

recommendations the city building code was amended and now permits walls built of Denison tile to be loaded five tons per square foot. This is but a fraction of their carrying capacity and yet is a far higher limit than they would ever be called upon to sustain under ordinary conditions.

From an economical point of view Denison tile seems to solve the problem of house construction and their use places fireproof buildings within the reach of everyone, making such construction almost as low in cost as frame construction and far lower when cost of maintenance is considered. In the construction of a single building in Cleveland, the new Hotel Statler, \$25,000 was saved by the builders through the use of Denison tile. The largest proportion of this saving was accomplished through the elimination of furring, as no furring is required on the inside of Denison tile walls, the tile being of a character which permits plastering directly on its face.

One of the modern popular ideas is the hollow tile wall

and Canada. Several leading manufacturers have already secured territorial rights and are meeting with great success in their sale of this material. Among these is the Great Eastern Clay Co. of New York and the Clay Product Co. of Chicago. We understand, however, that considerable choice territory is yet open. Denison tile construction has become exceedingly popular with many architects who are recommending same for residence, factory and business house construction.

NEW PENNSYLVANIA PLANT.

The Mt. Union Refractories Co., of Mt. Union, Pa., is a new company which owns large quantities of ganister rock near Mt. Union and has begun the erection of a plant for the manufacture of silica and magnesite brick. The purity of the ganister rock is what has made Mount Union silica brick famous, and the new company has an immense supply of such material.

TEN THOUSAND DOLLAR BOOST

The vitrified sewer pipe manufacturers of the country join in contributing the sum of \$10,000 for the promotion of their interests at the great clay show. They will occupy half of the Coliseum Annex and it is expected that the paving brick men will join with them in a great municipal display and congress.

That the big clay show will be a real success is becoming more evident as the winter approaches. The manufacturers of clay products of all kinds are rapidly awakening to the fact that this exposition gives them an opportunity, which they never before have enjoyed for exploiting their products and promoting their sales in a practical manner.

The last addition to the "boost forces" is the sewer pipe branch of the industry. The manufacture of this form of clay products is far from being a small item in the total production of clay products of the country, the production, in the year 1909, having amounted in value to \$11,428,000. The manufacture of vitrified pipe is in the hands principally of companies of considerable size and importance. One of the largest of these is the American Sewer Pipe Co., which operates a number of different factories and which has its headquarters in Akron.

The sewer pipe manufacturers of the Middle West have been acting unitedly for some time past in connection with matters of publicity and have an organization with headquarters in Kansas City. These manufacturers met last week in Chicago and showed the greatest enthusiasm regarding plans for the coming show. They decided to make a joint exhibit of vitrified sewer pipe and also to show individual exhibits. They agreed to raise \$10,000 for the joint sewer pipe exhibit, taking one-half of the floor space in the Coliseum Annex, with the expectation that the paving brick interests will take the other half of this space.

It is the plan of both the sewer pipe men and paving brick men to arrange and prepare exhibits of such interest and importance as will make it worth the while of city engineers and authorities to attend the show and invitations will be sent out asking the various cities of the country to send delegates to this municipal exhibit.

Many features of great importance and interest are being prepared. Among other things, it is expected to show a complete street, built by modern standard methods, showing the proper laying of sewer pipe and conduit lines and properly laid surfacing of brick. Such an exhibit in process of construction would make a most interesting feature of the show, and this and many other ideas which are being prepared, should make the municipal exhibit of such importance as to demand much attention from municipal authorities.

Secretary F. L. Hopley, whose office is 816 Chamber of Commerce Bldg., Chicago, continues to receive applications for space reservations. One of his great difficulties is to prevent the scattering of reservations to such extent as will prevent the concentration of exhibits of certain lines of manufacture necessary in creating a harmonious general effect. For example the Canadian brick manufacturers are considering a plan for a joint exhibit of Dominion clay products but they cannot make a decision in this matter until December. Meantime, Mr. Hopley must reserve a space for them with no certainty of its being taken. Many big propositions are "in the air," in a similar way, and for this reason it is hoped that those desiring space will make their applications early and will assist Mr. Hopley in every way possible in their selections so as to promote the success of the show as a great exhibit of clay products.

It is encouraging to note the interest and enthusiasm which is being shown by architects, builders and dealers in the coming Clay Products Exposition. This is reflected in the publications devoted to these interests, in fact, the "American Architect," one of the leading architectural journals, was among the first to encourage the movement, and as far back as last February published an editorial advocating the holding of an annual clay products exposition.

The editorial contains some live thoughts on the subject and we take pleasure in publishing it in full as follows:

That exhibitions of various building materials and appliances have in general resulted in large benefit both to the industries that have promoted them and the building world at large is undeniable. Their great value as educational factors cannot be gainsaid. The recent Cement Show in New York furnishes a fine illustration. Architects and engineers from all sections of the country journeyed to that city to view the exhibition and study the progress of the industry as shown by models and machinery. There was also evidenced a very broad and general interest on the part of the public, which, while naturally relying upon professional advice and direction for technical application and use, nevertheless thronged the exhibition in search of general information. No one can doubt the advantage of providing the means for this educational work. Manufacturers themselves learned from each other and many an architect realized that he had never before appreciated fully the possibilities of the materials shown, or perhaps thoroughly understood the reasons for many things made plain by the wonderfully complete and accurate presentations. In contemplating the matter the question naturally arises, "Why do not those interested in the sale and use of other building materials of wide application make use of similar educational methods?"

For example, who can doubt that an exhibition of clay products would prove of absorbing interest to the technical man as well as the general public, if made sufficiently comprehensive, and of very great value to the industry? As a matter of fact there is hardly a question but what this particular industry has somewhat neglected to avail itself of educational means readily at hand. No exhibitions of importance have been held. With few exceptions the various branches of the industry have been sparing of publicity even in quarters that practically control the destinies of clay products. Publicity is educational in its effect. This country's progress and development are due almost entirely to its broad educational methods.

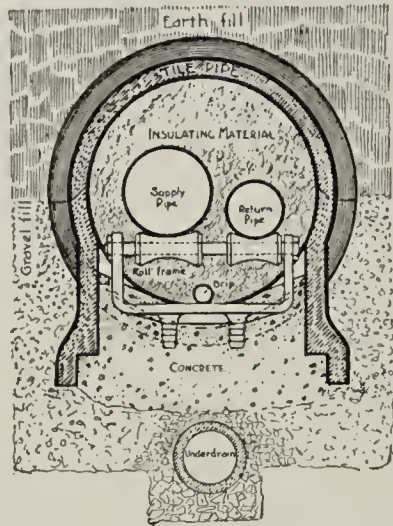
A business or an industry that neglects to educate those upon whom its success largely depends, by keeping them fully informed not only as to the properties and possibilities of its product, but also concerning the progress and development of the art, business or industry cannot reasonably hope to keep pace with the march of events. Only the greatest intrinsic merit will account for survival at all under a policy of self-sufficiency and assumed complete knowledge on the part of those interested under conditions that obtain today. There is little satisfaction or profit in only surviving or existing.

A growth at least in proportion to the growth of the country is essential to a healthy life. A growth equal to that of a rival industry is essential to a feeling of satisfaction or even comfort on the part of the thoughtful man engaged in any business enterprise. "Sufficient unto the day is the evil thereof" may be good philosophy, but it is a poor business motto. Plans for the future occupy the minds of the most brilliant man in every successful business organization. It is to be hoped that the clay products industries will not only decide to hold a mammoth exhibition annually, to which will be admitted every allied interest, but will supplement it with an educational campaign that will at least furnish complete and detailed information of a reliable nature to those who have almost daily use for it. The matter appears to be of the greatest importance. Perhaps the approaching convention of the Brickmaker's Association, to be held in Louisville, will afford an opportunity to launch the movement. To neglect such an opportunity at this juncture would be cause for keenest regrets.

CONDUIT SYSTEM OF CONVEYING STEAM

Most mills and factories are wasting considerable exhaust steam which they might well use with profit in heating all of their own buildings or by delivering same for heating purposes to surrounding residences making a neat sum thereby.

Some interesting work has in recent years been undertaken in the transmission of steam and hot water underground. In the past, this undertaking has been attended with a very considerable loss of heat, carried by radiation into the ground. It is nothing uncommon to see in midwinter the ground over such pipes free from snow



Cross-section of J-M sectional conduit through supporting tee.

even when there is a depth of several inches of snow elsewhere, and the green grass is sometimes observed in midwinter growing at these points.

The H. W. Johns-Manville Co., New York, are placing on the market and installing a sectional tile pipe conduit, which meets a long-felt want in providing a conduit for pipes running underground which should thoroughly insulate and protect the pipes, and which can be installed for a reasonable cost. This is known as J-M sectional conduit and consists of tile pipe made in top and bottom sections; this division being made by cutting half through the shell of the pipe before it is burned, and then breaking it after it is burned, so that the joint is very much like that made in replacing pieces of a broken plate, the use of neat hydraulic cement making it possible to put these sections together when desired, making practically a perfect piece again. As the top and bottom sections are numbered to correspond, the same sections can always be mated, and thus a perfect joint is secured.

The old-fashioned wooden conduits rot and become porous and inefficient. Concrete tunnels are expensive, their efficiency is short-lived, and under the best circumstances they cannot be made watertight, so the pipes and insulation are not properly protected.

The clay conduit made by this company does away with these objectionable features as it is a special vitrified-tile conduit, salt-glazed inside and out, as smooth and shiny as a piece of china. It is made in perfectly matched half sections, with rough edges, and can be easily cemented together and made perfectly watertight, which is a most important feature for underground work. Like other vitrified clay ware, acids, gases, soil conditions or the action of the earth do not affect it so that the first cost of the conduit is the only cost.

The support of the enclosed pipes is accomplished by supporting tee sections which are placed in the line of

conduit from 12 to 18 ft. apart, depending upon the size of the pipes enclosed. These supporting tee sections are placed firmly on a bed of concrete, which is carried up into the supporting tee section, the concrete holding the metal roll frame carrying the rods and rolls on which the pipes rest, thus the entire weight of the pipes and their contents is entirely independent of the conduit itself, and it is so firm as to permit of any weight and movement of the pipes without injury to the conduit.

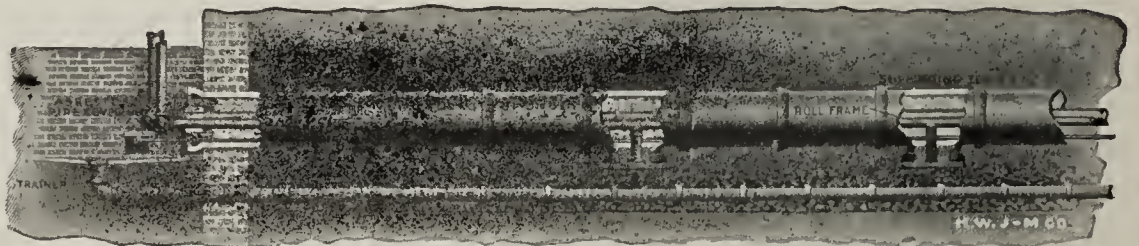
The conduit with supporting tees and roll frames are laid section by section until a line is completed, and then the pipes are put in place and tested, after which the insulation may be applied. This insulation may be of either J-M section pipe covering form, or what is more used and recommended is the J-M asbestos-sponge conduit filling with which the entire remaining space in the conduit about the pipes is filled, thus providing the best and cheapest form of insulation. This insulation is applied while the top sections of the conduit are applied length by length.

It is customary to place under this conduit an underdrain to remove the surplus water, which would otherwise lay against the conduit and absorb the heat.

It has been found that if desirable to open the conduit after the installation is complete, this is readily done.

Certain features of this conduit are especially meritorious. The simplicity of the system is due to its few parts, each part being designed for its particular function. It is claimed by the manufacturers that pipes may be installed easier in this conduit than in any other forms of conduit, and the insulation may be applied more easily, while the pipes can be gotten at for the purpose of repairing much more readily than in the ordinary form of conduit, except possibly the large tunnels, which are usually prohibitive on account of the cost.

This clay conduit is especially serviceable for underground work because it is water, fire and acid-proof; the



Details of construction of J-M sectional conduit.

conduit itself being practically indestructible, no opening of the joints is caused by any movement of the pipes on account of the form of support provided. With proper care in laying, the conduit is practically watertight and the cost of maintenance is comparatively nothing. This means constant service so far as the conduit is concerned.

This type of conduit, is said to provide the greatest efficiency possible in the transmission of steam or hot water underground, because of the thorough protection given to the pipes, and the highly efficient system of insulation provided. The low cost of installing this style of conduit, being one of its chief points of value. A test which was made by Mr. Geo. H. Barrus, expert consulting engineer,

of Boston, has shown that the loss of heat was less than that usually found in pipes installed in buildings, with the best commercial grades of sectional pipe covering to be had in open market, which would seem the most satisfactory in view of the fact that the pipes installed underground are placed in a more difficult position because of the amount of water in the ground, and the low temperature of the ground.

One reason for the greater efficiency of this method of transmitting steam underground is due to the fact that the pipes enclosed in the conduit with the conduit filling for insulation, are protected against any movement of the air over the pipes, whereas in the large tunnels with J-M sectional covering applied, the air is constantly moving over the pipes, even when covered in the usual way, there is considerable loss of heat due to this fact.

We understand that the H. W. Johns-Manville Co. has issued an illustrated descriptive catalog of this conduit which may be obtained by applying to the company at its general office at 100 William St., New York City.

REDUCING THE PAY ROLL.

The pay roll is the "bugbear" of every manufacturer and any plan by which the amount of the weekly pay roll can be reduced, must meet with favor. If a record were to be kept of all the minutes lost to employers through tardiness and loss of time of employees which is included in the pay rolls, the total sum at the end of each year would probably amount to a most staggering figure. A system by which this cost of lost time can be eliminated from the pay rolls should certainly be eagerly adopted by every economical employer.

It is, therefore, with pleasure that we call attention to the simple but practical time checking system offered by the Stromberg Electric Co., of Chicago. The Stromberg Electric Chronograph is a device intended to save money for manufacturers and to facilitate the preparation of the pay rolls. A clock device is included in the outfit and a system of time cards for employees by which an accurate record is maintained of the going in and coming out of all employees. These time checks accomplish a triple purpose; first, keeping tab on the working time of employees; second, providing a means for making up the pay roll accurately; third, providing a means for recording cost of manufacture.

Where a number of people are employed, some system of recording their arrival and departure is essential to insure full returns for the pay roll expenditure and to influence punctuality and regularity. Most of the systems recommended for this purpose are too costly or too elaborate for the practical use of clay manufacturers, but the Stromberg system provides a simple easily kept record, combined with low cost of installation.

Some systems recommended for this purpose give records that are far from simple and which require a vast amount of time on the part of the time keepers to translate and reduce to plain figures. From the chronograph records, however, the employees' net time and wages can be computed with a minimum of labor, the employee practically being his own time keeper and he is unable, therefore, to dispute his own records.

It is needless to go into detail in describing the Stromberg system in this article. The manufacturers, the Stromberg Electric Co., 1256 Marianna St., Chicago, or 277 Broadway, New York City, will be glad to send a little booklet on the subject upon request.

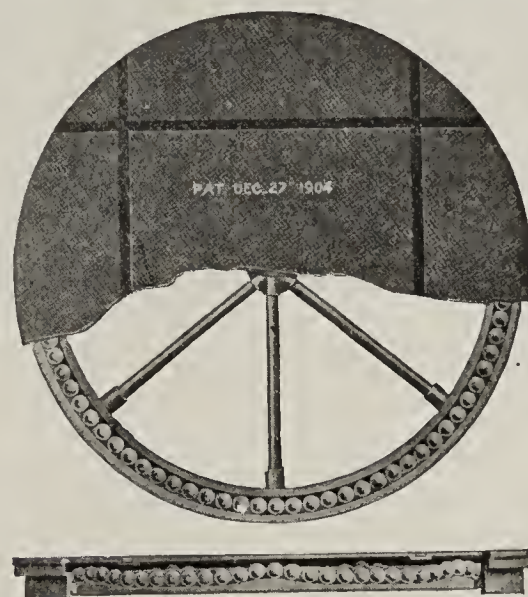
The Stromberg system is also very useful for stamping time records upon all office business orders, requisitions, job tickets, invoices and other matters.

THE CANTON TURNABLES.

With the progress of the clay industry, a large number of the manufacturers of clay products have adopted industrial railway equipment to a considerable extent, for the purpose of reducing their transportation expenses. An important feature in all such equipment is the turntable and various styles of these are on the market.

Where dryers are used and brick are handled to and from a dryer on dryer, or transfer cars, the turntables are a regular part of such equipment. To meet the special requirements of this branch of the clay working industry, the Canton Foundry & Machine Co., of Canton, Ohio, have perfected a turntable, which has been found especially satisfactory and which is in successful use on a number of leading yards.

The most important feature of the Canton turntable is its serpentine ball-bearing race course, which it is claimed eliminates over 75 per cent of the friction, as the weight of the table rests entirely on the balls at the highest points of the track, the remainder of the balls rolling down into the



Serpentine Ball-bearing Race Course.

pockets that are filled with lubricating oil. This ball-bearing system so eliminates the friction that the operator can turn this table even when loaded to full capacity, with a weight of five or six tons, as easily as when it is but lightly loaded, the table turning with the slightest effort.

Another feature of the Canton turntable is that they are but six inches in depth, allowing of their installation in any floor, without requiring extensive excavations.

Other features are that they are positive locking, self-oiling and absolutely dirt proof. They are strongly built with the weight properly distributed, to reinforce those portions receiving the greatest strain, thus insuring against breakage.

There are many other features of the Canton turntable well worthy of consideration and doubtless these tables will continue to be in good demand by brick and tile manufacturers.

WORLD'S BRICK MAKING RECORD.

All records for rapid brick making were beaten in Chicago, recently at the Carey brick yard, when 354,000 common brick were made on a stiff-mud machine, dried and set by the Penfield brick-setting system, in a period of eight hours. This is a most remarkable record and sets a high mark in brick production.

The Bolivar Fire Brick Co., of Bolivar, Pa., has filed notice of an issue of stock to the amount of \$200,000 and an issue of bonds to the extent of \$130,000.



BRICK AND CLAY RECORD

VOL. XXXIX.

NOVEMBER 1, 1911

No. 9

EDITORIAL COMMENT.

The quality of the goods produced is the rock on which many mammoth clay plants have builded their success. Quality alone builds up a line of customers who stick. Why do you always go to Jones' for your hats? Because you bought a hat there many years ago which proved to be an extra good one—the next one was just as good, so you have been going there ever since and probably will continue to do so—provided he does not decide to reduce the quality keeping the price the same. The moment he does that he loses you as a steady customer.

The same principle holds true in regard to selling clay ware. No arguments could induce some contractors and builders to buy brick except from his favorite manufacturer, because he knows from past experience he will get good brick delivered promptly. So, once a customer, should mean always a customer, if properly handled.

It is not necessary to tell any clay manufacturer that to maintain quality, everlasting watchfulness and care are necessary, from the moment the clay leaves the pit until it is loaded in the car.

Post-mortem examinations of dead business ventures prove as valuable to the business world as the ordinary autopsy to the world of medicine. Analyze the reasons for the failure of any clay manufacturer and you cannot fail to discover weaknesses, faults and mistakes which it behooves the wary man to avoid if he would not fall in the same pit.

The study of clay plants which are notably successful may be more inspiring but for the man who takes home and applies the significant lessons learned from the mistakes of others has taken the short-cut to a knowledge which may be considered an insurance against failure, from

the same causes at least. It is doing the unusual feat—of gaining wisdom without paying the usual price of bitter experience.

No great war was ever settled by the winning of one battle—but only by continuous onslaughts breaking down the opposing enemy point by point until they give in from sheer exhaustion. So with the battle of the clay industry against opposing interests, just now seems to be "the thickest of the fight" and if ever there was a time when all interested in promoting the sale of burned clay products, should stand shoulder to shoulder and "swat" the common enemy it is—now.

A great lawyer pleading his case does not stop when he has gained a point, but continues to pile up argument after argument until the preponderance of arguments proves his case beyond the shadow of a doubt. Our case is up before the court of public opinion—the question to be decided is whether brick shall be the building material par excellent and stand as the model or whether it shall be accorded a second rate place and considered only for utilitarian purposes. Remember, the position we now occupy is only temporary—a step in advance of that of last year—but not the goal of our high ambitions.

WHAT IS A BRICK.

We consider it the highest compliment to a man in this country when we dub him a "brick," but foreigners do not always understand our American slang, as is demonstrated by the following anecdote:

Franklin Matthews, a war correspondent, who went abroad with the great battleship-fleet, while stationed near Mukden, met Field Marshall Oyama, and while talking with him became impressed with his personality and excellent education, so that when he returned to his quarters he wrote a two-hundred word cablegram to the officers in the United States in which, among other things, he said:

"I find Marshall Oyama a brick."

This was sent to the interpreter who translated it in Japanese and sent both copies to the army censor. That afternoon Matthews was questioned by the commanding captain regarding the cablegram and especially concerning the expression "You are a brick."

Matthews explained to him that in America when you call a man a "brick," you mean he is "a splendid chap, fair and square and all that." The captain smiled the Japanese smile and said: "Your interpreter was very clumsy. He translated the word 'brick' literally, making it read 'a lump of dried mud,' which puzzled me greatly and I am glad of your explanation."

CONSERVATION.

Conservation of national resources is an excellent thing. Conservation of time, money and trouble are more important to the man who wants results.

"Brick and Clay Record" gives highest, best and quickest results for the least expenditure of time and money to its advertisers in its Classified Department.

This is not merely "say so," but the evidence given by many satisfied users of this excellent medium for reaching the clay trade. Rates \$2.00 per inch for space used. Send copy now for our next issue.

FOR OUR ARCHITECT FRIENDS.

We not only want the architects through the country to take an interest in the big clay products show to be held at the Coliseum, next March, but we want them to show us how to make it beautiful. For the purpose of bringing out the opinions and suggestions of the architects of the country, "Brick and Clay Record" is going to give them an opportunity to earn valuable cash prizes through the submission of designs suitable for exhibition structures. The publishers therefore hereby offer the following cash prize for the best designs of exhibit structures for use at the clay products show to be held at the Coliseum, March 8th to 12th, 1912:

First prize	\$100.00 cash
Second prize	50.00 cash
Third prize	25.00 cash

Specifications.

There is no limit placed on the elaborateness or cost of the proposed exhibit structure. The only limitation is that it shall show the use of the brick manufactured by the exhibitor through its use in wall facings, arches, columns, windows, walls, porches or other forms of architecture in which brick can be used to advantage. The structure must be planned to occupy a space not in excess of 20x50 ft. frontage on the aisle. Designs submitted should show the front elevation of the structure, but may also show the exposed interior.

A well known brick man and two well known architects in Chicago will be selected as judges and the utmost care and fairness will be shown in the treatment of the contestants. The contest will close November 15th, and all designs should be submitted to the publishers, 445 Plymouth Court, on or before that date. The plans should be enclosed in a blank envelope with no writing either on the design or on the envelope to indicate the author, but with the name and address of the sender enclosed in a blank and unidentifiable envelope attached to the copy submitted. When received the sealed address and the design will be marked for identification and separated so that it will be impossible for the judges to identify the authors of the designs submitted and the contest will be settled purely on its merits.

All designs submitted will remain the property of the publishers. Orders for working drawings of any of the designs submitted, may be furnished to the prospective exhibitors by the architects, by special arrangement between them.

As the time of this contest is limited to such a short period, it is expected and hoped that architects will get busy on same very promptly. Each one has the same advantage and the prizes will be easy money for some one.

Brickmakers throughout the country are urgently requested to induce architects of their acquaintance to enter designs in this contest. Address all communications to the Kenfield-Leach Co., 445 Plymouth Court, Chicago.

HE HOLDS THE RECORD.

Jimmy told Johnny what he called a "fib," whereupon Johnny took him to task as follows:

Johnny—"A 'fib' is the same as a story, and a story is the same as a 'lie.'"

Jimmy—"No, it's not."

Johnny—"Yes, it is, because my father said so, and my father is a brick salesman, so he ought to know."

Jimmy—"I don't care if he is. My father is a cement tile salesman, and he knows more about lying than your father or anybody else's father."

OUR NEW HOME.

A novelty in the way of publications has just been issued by the Reilly & Britton Co. under the title "Our New Home." The book is artistically bound and handsomely illuminated and its contents are nothing more nor less than blank pages divided into various sections, classified according to the parts of construction of a residence, its interior furnishings, etc. This book is intended to be used by a prospective house builder in planning a new home, and makes a most convenient and attractive volume for such a purpose.

This book will be found very useful by the manufacturers and dealers of brick and other building material, to use as a souvenir to be given to prospective house builders who would appreciate such a gift and who would be influenced thereby in favor of the donor. With such a gift could be sent other suggestions in the form of the publications issued by the Building Brick Association.

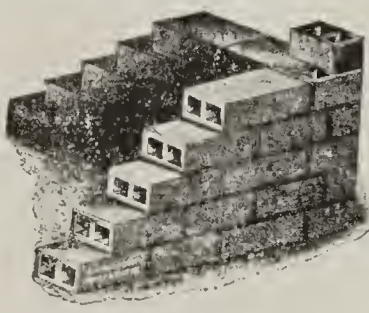
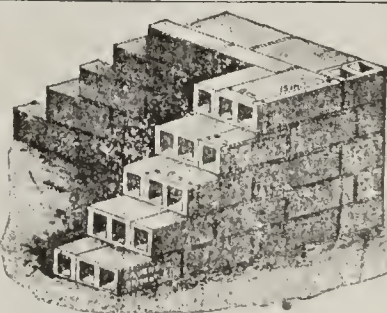
DEATH OF JOHN McLAREN.

John McLaren, well known throughout the clay industry as the president of the Phillips-McLaren Foundry Co., manufacturers of clay working machinery, died suddenly of heart failure while waiting for a train in the Pennsylvania Railroad station at Braddock, Pa., October 15th. Mr. McLaren was sixty-one years old and had been in excellent health and never had complained of heart trouble. He had been a resident of Pittsburg for forty-five years, where he was at one time a member of the school board, and at the time of his death was trustee of the Presbyterian Church. He is survived by a widow and six children.

PRACTICAL ADVERTISING.

Most clay manufacturers realize that the question of promoting sales for their product resolves itself largely into a local proposition and plan their advertising campaign to suit the particular conditions in their various localities. We are pleased to note the large amount of local advertising being done by all "live ones" in the trade all of which cannot help but result in bringing many con-

Of Financial Interest and Comfort To Prospective Buyers

ATTRIBUTED FOUNDATION BLOCKS made of shale-clay ARE FAR SUPERIOR TO ANY OTHER MATERIAL and keep the cellars and basements as dry as possible and also warmer in winter and cooler in summer; and of this make the walls vermin proof. If a party wishes to plaster they will be able to save 1/4 to mortar and have a smoother wall than with stone. Whenever you intend to build ask your Architect to specify our make or its equivalent and have the contractor see to it. THIS WILL BE IN YOUR OWN INTEREST FINANCIALLY AND ALSO IN THE WAY OF COMFORT AND IMPROVEMENT. Our blocks have been used in the palatial residence of L. P. Diet and Wm. P. Nettendorf, and also with the U. S. government building at Moline, Illinois Lock. With the many advantages that our foundation blocks have we believe it will only be a question of time that most cellars and basements will be built of same. Whenever you are in need of any building blocks we will be pleased to be favored with your orders.

DAVENPORT BRICK & TILE CO.
JOHN BERWALD, Secretary 226 West Third Street, Davenport, Iowa

verts to the belief that brick is best for building homes, business blocks, churches and school buildings.

The Davenport Brick & Tile Co. of Davenport, Ia., have made excellent use of an effective advertisement, a facsimile of which is shown herewith, in various papers in Scott County, Ia., and Rock Island County, Ill., for several years past. This enterprising company displayed examples of their silo construction at the Dairy Show, recently held in Chicago. This company was also one of the first to give substantial assistance to the Clay Show Exposition Co. by engaging space at the Coliseum.

NEW ELECTRIC RECORDING INSTRUMENT.

A new type of electric recording instrument particularly adapted for use as a recording electric pyrometer, recording voltmeter or ammeter has been designed by the Brown Instrument Co., of Philadelphia, the pyrometer manufacturers.

Recognizing the necessity of a recording instrument which is both accurate in operation and simple in con-

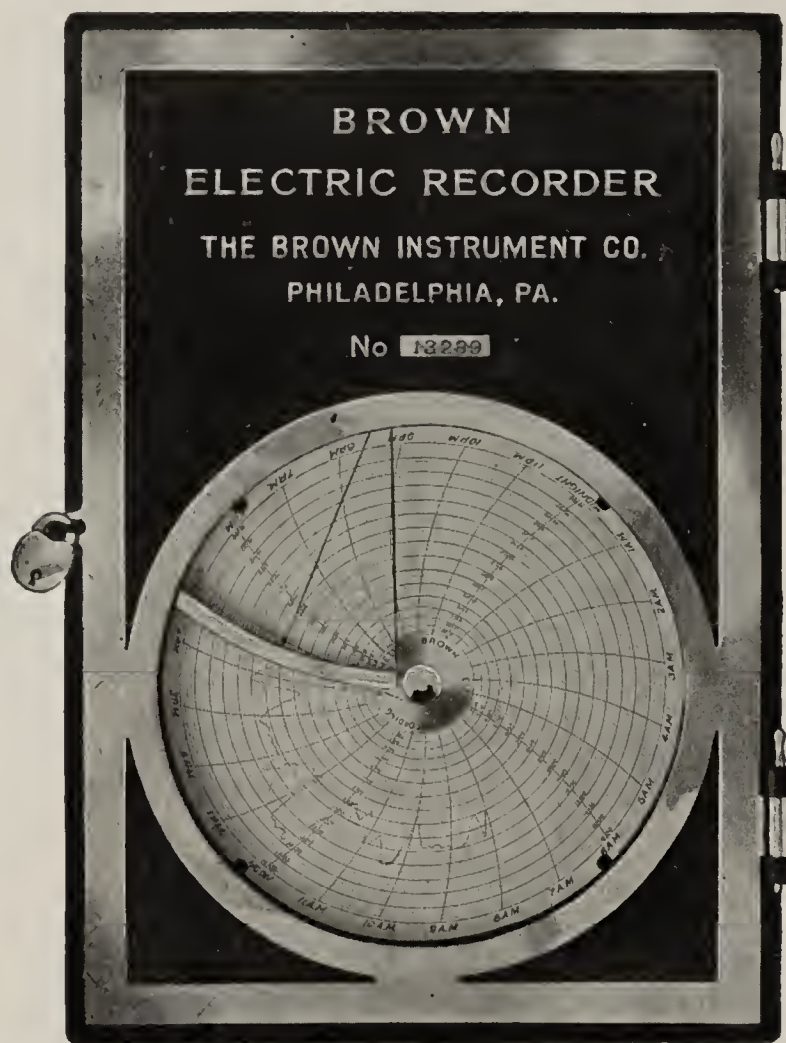


Fig. 1. Recorder in Operation.

struction, the Brown Instrument Co. has spent much time in designing a recording instrument which can be mounted on the wall or switchboard and used by the most inexperienced workman.

In the common form of recording instruments, no means are provided for shifting the recording pen arm out of the way when the chart which receives the record is changed, consequently there is serious danger of bending the pen in removing the chart. In this respect the new Brown recording instrument is most novel in construction, in that the essential parts of the instrument are mounted on the door instead of in the case. The clock mechanism and chart alone remain in the case when the door is opened. Consequently there is no possibility of bending the pen, because there is no occasion to handle it for any reason whatever. As soon as the door is thrown open, the entire voltmeter system and the inking device is swung aside automatically, permitting the old chart to be easily removed and a new one substituted.

Fig. 1 is a photograph of this recorder in operation with the door closed, while fig. 2 shows the instrument with the door thrown open ready to have a new record chart installed.

The millivoltmeter system which is used in this new recording instrument is a simplified form of the D'Arsonval system, which is the only system used in electrical instruments of precision. Also the recording pen comes in contact with the paper momentarily, only for the purpose

of making a dot, thereby eliminating all friction between the pen and the chart.

An inking pad is placed immediately beside the pen carrying sufficient ink for a week's supply, and this inking pad touches the pen point frequently keeping the point damp. When the door is closed the arm seen at the left of fig. 2 and operated by the clock mechanism comes in contact automatically with the inking device, and every half-minute or quarter-minute if preferred, it pushes the inking pad away from the pen, permitting it to swing freely. It then falls, allowing the inking pad by its own weight to press the recording pen against the paper.

The manufacturers claim that an instrument, so simple and free from unnecessary parts and operating without friction on the paper, has never before been designed as is clearly realized by an examination of fig. 2. In no apparatus is simplicity more desirable than in recording instruments, and the simplicity and improved features of this new recorder will particularly appeal to those who have had experience with the delicate construction of electrical recording instruments heretofore on the market.

NEW ASHTABULA PLANT.

We have received further information regarding the plans of the newly organized Ashtabula Shale Brick Co., which is to build a paving and building brick plant at Ashtabula, O. Thos. Fricker is president, and N. C. Ralph is secretary and general manager. The latter was formerly connected with the United Brick Co., Conneaut, O., for over six years, and has a wide experience and acquaintance with the brick business.

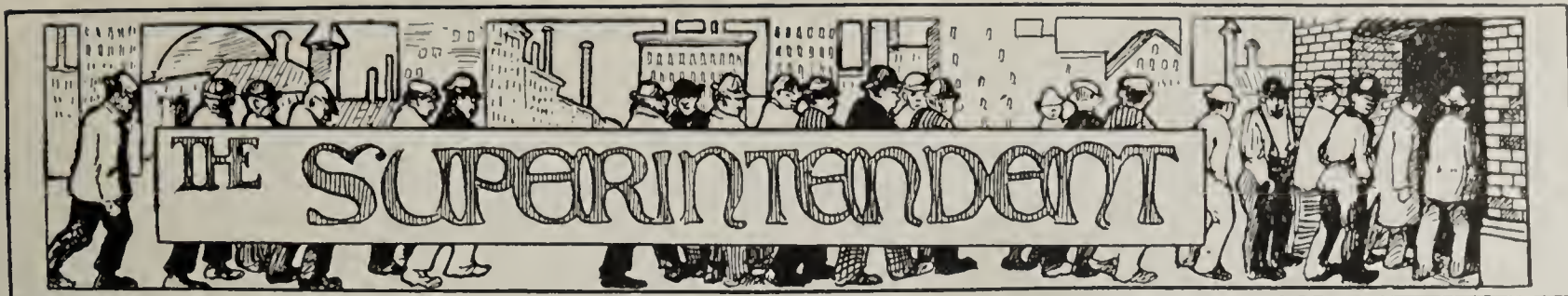


Fig. 2. Recorder with Door open ready for Installation of New Record.

The new company is capitalized at \$150,000, and will build a stiff-mud plant with a capacity of 50,000 paving block per day. The property includes 36 acres of fine shale requiring no stripping.

There is no other brick plant in Ashtabula, although the population of that town is 20,000. The new plant includes a waste-heat drying system, and 10 rectangular kilns. A power plant of 300 h. p. will be installed.

The following item appeared in an Iowa paper: "A car load of brick arrived yesterday, for a walk through the park."



This is your department. If you have any queries you wish to have answered, send them in and they will be answered by an expert. If you have any comments to make or if your views do not coincide with those set forth in our columns, we want you to feel free to use this department to state your opinions. We are not "hide-bound," but believe that, "Many men are of many minds," and we hereby extend to you the privilege of "giving us a piece of your mind," if you so desire.

MORE BURNING QUESTIONS.

An Indiana manufacturer of fire and building brick says:

I am making a stiff-mud shale brick and am troubled with whitewash on the brick. I would be glad to know what to do to overcome this.

The following remedy has been suggested:

Doubtless you understand that whitewash is caused by the soluble salts in the material and the best remedy that we know of is to mix with the clay, either carbonate or chloride of barytes, which unites with the soluble salt, this forming unsoluble salts, which prevents scumming or efflorescence. The barytes is put in at the pug mill and usually in a quantity of 3 ounces to 100 pounds of clay, although this amount depends entirely on the quantity of soluble salts in the material. It is hazardous to put in too much barytes, as an excess might cause scum to appear on the brick but the proper amount can only be secured through experiments. It often happens that scum appears on the brick on account of the burning process, which is caused in the kiln by the sulphuric gases. This can be remedied by thoroughly drying the brick before burning, and using coal as low in sulphur as possible.

An Indiana drain tile manufacturer writes us as follows:

We use surface clay for the manufacture of building brick and would like to find a cheap method of glazing one of the brick. Our clay will not salt glaze. Can you tell us what method we should use for glazing this ware?

A cheap method of glazing is offered, as follows:

We believe that the Indiana drain tile manufacturer would secure good results by trying the old German method of making a slip glaze, that is, taking the clay such as will give the proper color, grinding it into the consistency of cream and mixing with it a fluxing salt. This preparation can then be applied to the hollow block, as it comes out of the machine either by a roller or by hand.

A manufacturer of dry pressed and re-pressed brick in South Carolina writes us asking information as follows:

We are making some light and yellow colored brick that turn green after exposure to the weather. We know this is common with light colored brick, but we have been advised that this can be overcome by the use of certain chemicals or other substances. We would be glad if you could advise us what materials we should use to correct this fault.

The following remedy has been suggested:

The turning green of the white and light yellow brick, on being exposed to the weather, is undoubtedly due to the presence of lime in the material. This trouble may be remedied by treating the material with barium salts.

A manufacturer of building brick in Pennsylvania tells us his "burning troubles," asking advice in the matter as follows:

I would like to have advice in the matter of burning brick. We have what we call a square down-draft kiln

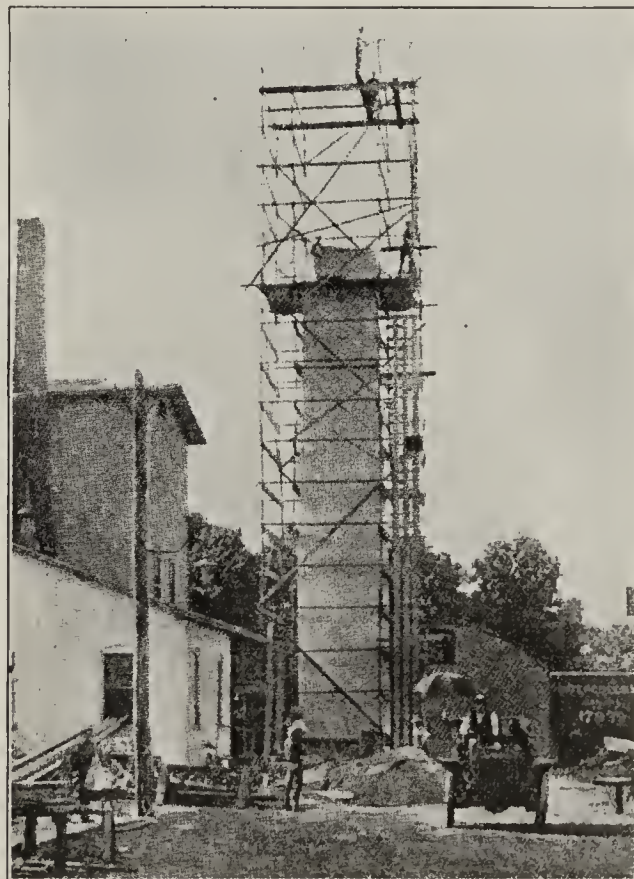
with partly open bottom. Some kilns have ten fire boxes and each fire box has a small stack about 20 ft. high. We burn common red brick. The fire seems to burn well and we fire with soft coal and get a white heat clear to the bottom, but when we try to get a settling heat, the brick at the fire boxes melt before the heat travels any further, so that we have to fire very slowly. We do not know whether the trouble is because we do not have draft enough or whether the bottom of the kiln is too damp. The kiln bottom is made of salmon brick. We would be glad if you could give us any light in the matter.

These queries have been answered in the following manner:

The party who has trouble with the brick melting at the fire boxes has evidently "hit the nail on the head," when he states that he either has not draft enough or that the bottom of the kiln is likely to be too damp. Both will cause the melting of the brick at the fire boxes, although we cannot tell definitely on this point on account of not knowing the exact construction of the kiln. If the latter is properly constructed then there is no doubt but that he has not draft enough. We would suggest in this case that he look into the question of draft and if possible make a concrete bottom in his kiln in order to keep out the moisture. If he should increase his draft it would also tend to overcome the moisture.

AUTOMOBILE LIFT.

In building a new brick chimney, the McKinzie Milling Co., of Quincy, Mich., used the proprietor's automobile in raising the brick to the required heights on the staging, says "Popular Mechanics." The lifting cable was passed through a pulley and attached to the rear axle of the auto-



Auto-Power Used to Lift Brick and Mortar.

mobile, the machine being run forward to elevate the buckets and backward again to lower them. This method of elevating the brick and mortar was found much more rapid than with horse power.

IMPORTANT LEGAL DECISIONS

Rescission for Fraud, and Oral Changing of Contracts.—To justify rescission of a contract for fraudulent representation in procurement thereof, the supreme court of appeals of West Virginia says, *Home Gas. Co. vs. Mannington Co-operative Window Glass Co.*, 61 Southeastern Reporter, 329, that such representation must be a positive statement of a material existing fact, present or past, made for the purpose of procuring the contract, and actually relied on by the other party, who must be misled thereby. In absence of fraud or mistake, when an agreement is reduced to writing all previous oral negotiations are resolved into and extinguished by the writing; it being the highest and safest evidence of the true final agreement of the parties to it. This rule prohibits ingrafting on a contract prior or contemporaneous conversations or stipulations not carried into the written contract, so as to add to or conflict with the agreement spoken by the writing itself.

Right of States to Exclude Foreign Corporations.—A state has the right, the supreme court of Vermont says, in *International Text-book Co. vs. Lynch*, 69 Atlantic Reporter, 541, to exclude entirely any foreign corporation, that is any corporation organized elsewhere, from doing business within its limits, and it follows that the right of such corporation to engage in business in another state depends solely upon the law of that state. They have no right to exercise their franchises in that state except upon such terms as it may impose. There is nothing in the federal constitution that prevents a state from prescribing the terms on which foreign corporations shall come within its borders and carry on business with its citizens.

Determinations of Party Designated by Contract.—Where parties to a contract designate a party who is authorized to determine questions relating to its execution, and stipulate that his determination shall be final and conclusive, both parties, the supreme court of Colorado says, *Empson Packing Co. vs. Clawson*, 95 Pacific Reporter, 546, are conclusively bound by his determination of those matters which he is authorized to determine, except in case of fraud, or such gross mistake upon his part as would necessarily imply bad faith, or a failure to exercise an honest judgment.

Rules as to Construction of Contracts.—The rule is elementary, the supreme court of Illinois says, in *McLean County Coal Co. vs. City of Bloomington*, 84 Northwestern Reporter, 624, that, in the construction of a contract it must be found from the contract itself, if that can be done, what the true intention of the parties was at the time they entered into it, and in doing this every part of the contract must be considered and given effect, if possible. No part will be rejected unless it is necessary so to do in order to prevent a defeat of the purposes sought by the parties to the contract. In construing a written instrument the great object is to arrive at the intention of the parties. The entire instrument, whether on one piece of paper or on several, and all writings on the same subject, when referred to and made a part of said contract, should be considered in interpreting each particular part. In construing a written contract the court will endeavor to place itself in the position of the contracting parties, so that it may understand the language used in the sense intended by the persons using it. When the terms of a written agreement are in any respect uncertain or doubtful and the persons by their own conduct have placed a construction upon them which is reasonable, such

construction will be adopted by the court, and therefore evidence of acts showing the practical construction of the instrument by the parties themselves is admissible.

Waivers by Insurance Company.—A stipulation for the forfeiture of an insurance policy, the supreme court of Nebraska holds, *Jensen vs. Palatine Insurance Co.*, 116 Northwestern Reporter, 286, is waived by conduct of the insurer inconsistent with his right or intention to claim such forfeiture. Also, a provision of an insurance policy that the insured shall, in case of loss, submit to an examination under oath by any person named by the insurer, is waived by a denial of all liability under the policy, and a failure to demand such examination until long after the commencement of the action on the policy. And a provision in a policy of fire insurance that the policy is payable 60 days after due notice and satisfactory proofs of the same are made by the insured, and received by the insurer, is waived by such action of the insurer as waives proof of loss, and in such case interest should be computed from the date of loss. Moreover, where the value of the goods destroyed is greater than the amount of insurance thereon, such value is immaterial to the risk, and the making by the insured, after loss, of an affidavit in which the value is overstated will not constitute a defense to the action upon the policy under a clause providing that the same shall be forfeited in case of any fraud or false swearing by the insured touching any matter relating to the insurance either before or after loss.

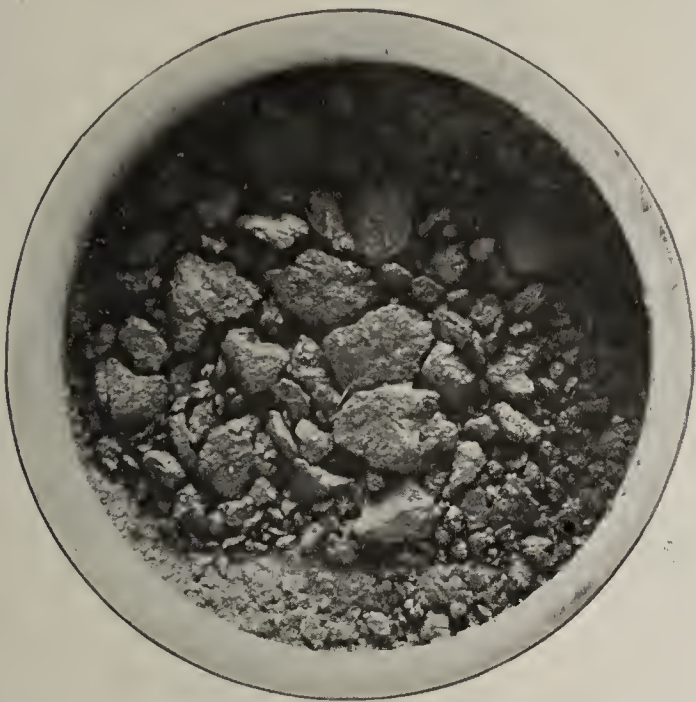
Not Conclusive as to Condition of Freight.—The statement on a receipt or bill of lading given by a railroad company that goods were received in "apparent good order," the supreme court of Oklahoma holds, *St. Louis & San Francisco Railroad Co. vs. Jamieson*, 95 Pacific Reporter, 417, is not conclusive evidence to that effect, but it is competent to show they were not in good order. By such receipt or bill of lading issued by the initial carrier as agent for the delivering carrier, however, the burden is put upon the delivering carrier to show they were not in the condition stated in the receipt. Thus where several packages were delivered in one shipment and under a single entire contract to a carrier for shipment, not only over its own line, but also a connecting line, in an action by the consignee against the delivering carrier, from which he received a portion of the consigned goods, for injury and loss thereof, on the introduction by the consignee of the bill of lading issued by the initial carrier to the effect that the goods were received by it "in apparent good order," the burden of proof was on it to rebut such prima facie presumption of delivery in "apparent good order," or to show that the alleged damage or loss occurred before it reached its line.

Agent Knowing About Outstanding Insurance.—A fire insurance company which, through its agent, has either actual or constructive notice of the existence of outstanding insurance upon property when it issues a policy upon the same property, the court of appeals of Georgia holds, *Insurance Co. of North America vs. De Loach & Co.*, 61 Southeastern Reporter, 406, is precluded from insisting upon a clause in the policy whereby it is to be void if there be outstanding insurance. Nor does the court think it material whether the amount of the outstanding insurance was actually known or not, in the absence of some suppression of truth by the insured as to it; for the knowledge which will effectuate a waiver includes, not only that which is actually known, but also that which might have been ascertained by reasonable inquiry.



THE ACTION OF ALKALI ON CEMENT.

A very important bulletin (No. 81) has just been issued by the Montana Agricultural College Experiment Station at Bozeman, Mont., of which F. B. Linfield is the director. The bulletin discusses "The Destruction of Hydraulic Cement by the Action of Alkali Salts." This



Showing results of action of Alkali Salts on Cement.

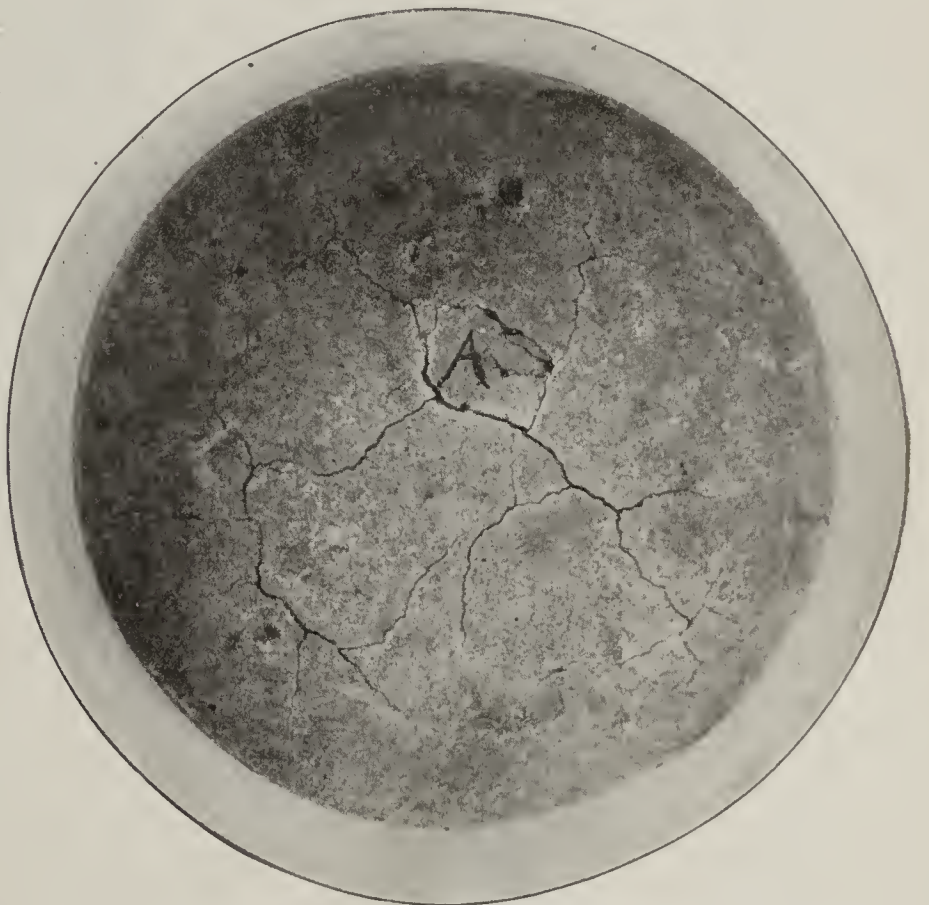
subject is one of great importance in Montana and other western states where alkali salts prevail and the Montana Agricultural College Experiment Station has given this subject particular attention and has secured much valuable information, resulting from investigations and elaborate tests extending over a considerable period of time. The investigations conclusively show that the seepage of water through alkali salts soon causes the disintegration and destruction of cement or concrete pipe. The bulletin among other things says: "The disintegration of concrete in this state was called to our attention about three years ago. * * * To apprise the users of cement of the dangers of placing concrete in salts containing alkali, a preliminary bulletin was published (No. 69). * * * The new bulletin gives an account of the work done relative to the chemical changes that take place when alkali acts upon cement."

AN EXPLANATION.

We have just received information from a prominent authority in tile matters in reference to the recent, so-called, "clay tile failure," in Sac County, Ia., in which the following statements are made which show that the fault was not with the tile but with the manner in which they were laid:

In regard to the failure of clay tile in a ditch near Auburn, Ia., I have a report from the makers of the tile that the failure was nothing more than a failure of tile in a railroad wreck would be, or as they state it, those that were put in with the machine were the ones that

failed. In no case were those laid by hand found to be damaged in any way. The machine used in laying these had a wheel, that was for 36 in. tile that were used in this ditch, which cut a trench over 40 inches in width with smooth sides. A great many of the 36 in. tile made by Blackmer & Post and Evens & Howard of St. Louis have been found to have collapsed. It can easily be seen that the surface that the 16 inch tile had to lay upon was nearly level and was not troughed in any manner to receive the tile and as the machine was one of the back-filling type, the clods and sod, as discharged into the ditch, naturally rolled down onto the tile, which had a bridging effect from the side of the tile to the side of the ditch, which consequently threw the entire weight of the dirt above upon the tile, which received no support from the sides. The walls of the trench being smooth and vertical, the dirt above had practically no bridging tendency from wall to wall of the ditch as would naturally be expected. The wall of the 36 inch tile were nearly 3 inches in thickness and it is easily seen why the 16 inch should fail, when a good many of the 36 inch have failed. As I have said above, none of the tile laid

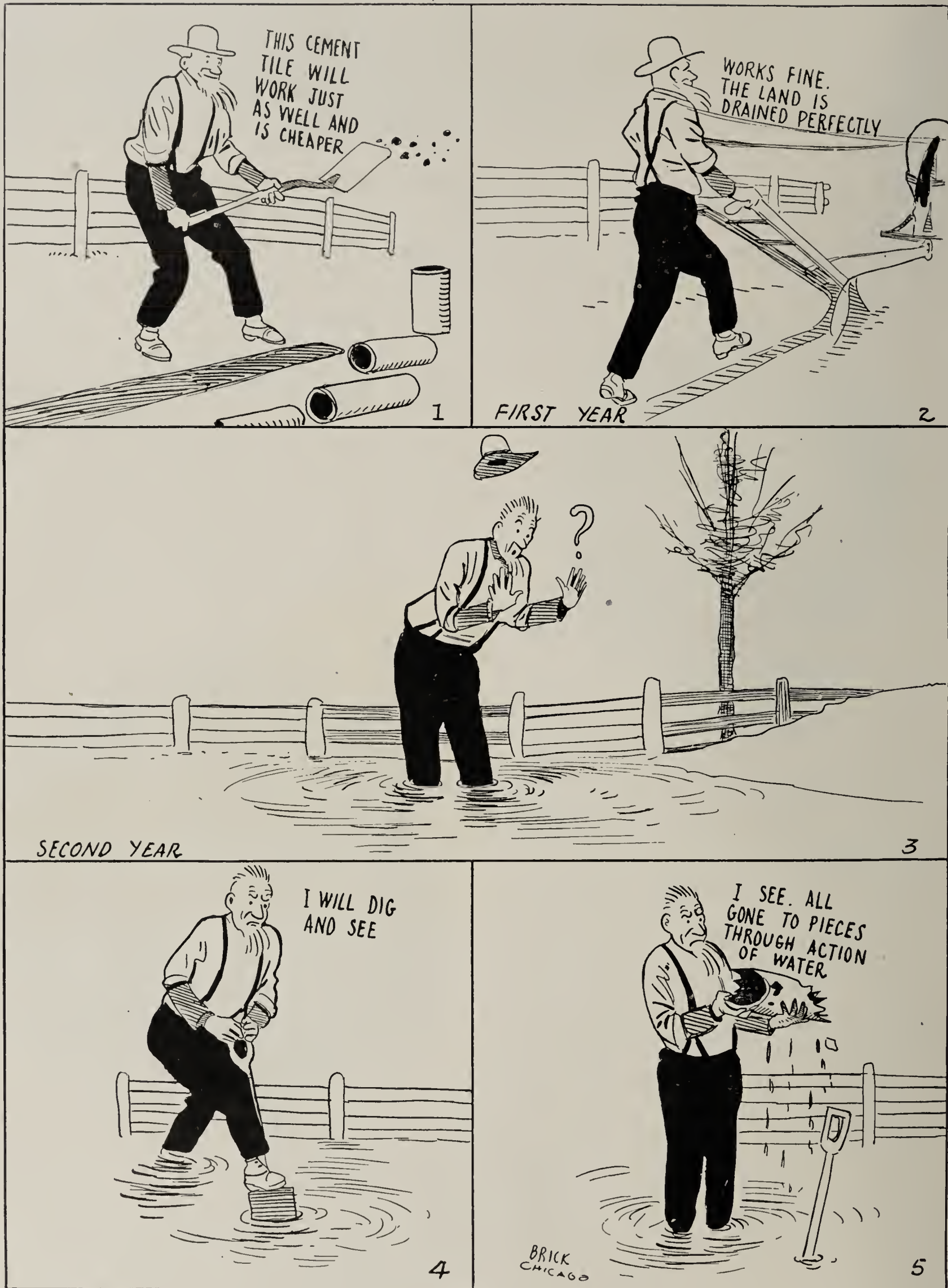


Showing Disintegration of Cement caused by the action of Alkali

in the trenches dug the proper width have failed.

"This explanation was given to the writer by H. R. Straight of Adel, who is one of the family of Straights owning the Auburn plant.

"It would seem, as I remarked, that this failure has absolutely nothing in it which should count against tile, any more than would the smashing of tile in a railroad wreck or any other condition which it is not expected that tile will withstand."



All Right! If Kept Dry



AMERICAN GOOD ROADS CONGRESS.

Preparations for the American Good Roads Congress, to be held in conjunction with the Eighth Annual Convention of the American Road Builders' Association at Rochester, N. Y., Nov. 14 to 17, are going ahead rapidly. Delegates from all sections of the country are writing in to the association's headquarters, announcing their intention of attending the meeting.

Governors of many states in this country and also from Canadian provinces have forwarded names of delegates who will attend.

The prompt response of these chief executives to the invitation of Gov. Dix of New York indicates their interest in highway improvement and shows that they are impressed with the importance of this meeting as an educational factor.

Applications for exhibition space continue to come in from manufacturers of road and street building machinery and materials. Among those who have made application for space are the Barber Paving Co., Austin-Western Co., Universal Road Machinery Co., Dunn Wire-Cut Lug Brick Co., and the National Paving Brick Manufacturers' Association.

PLANTS BUSY IN OHIO.

Our Ohio correspondent informs us of conditions there as follows:

"Paving brick manufacturers, in the Upper Ohio Valley, have so many orders on their books that complete delivery of all this business during the remainder of the year is impossible. Never before has the demand for paving brick been so enormous as has been experienced this year.

"Throughout the country municipal improvements have been excessively strong, and any amount of work that has already been contracted will not be completed before next spring.

"Paving brick yards in this locality, do not work throughout the year, but, this season, operations will continue until the most severe cold weather sets in.

"One reason for the great demand for brick and block this year has been the increase in the volume of new highway work. In past years only towns and cities spent money for this purpose, but during the last few years State Highway departments, counties and townships have fallen into line on the better roads movement, and manufacturers of brick and block have been benefited materially."

"One paving block manufacturer declared he has enough orders on his books to continue operations without interruption for the next five months, and then he would not be caught up. At the same time he was not taking into consideration the possibility of receiving orders in the meantime.

"In the New Cumberland, W. Va., and Toronto districts, and out on the main line of the Cleveland & Pittsburgh railroad plants, are busier this fall than ever before. Stocks in yards are low, amounting to practically nothing,

shipments of paving brick and block having been made direct from the kilns.

"Paving blocks for two streets in Massillon have just been sold by the Alliance Brick Co. Massillon has two brick plants of its own, but the demand this year has been so great that they find themselves at the season's end unable to care for all their orders. Hence two streets of that city must be furnished by outside brick companies.

"The Alliance Brick Co.'s brick were selected after two trips to the company's plant by Mayor Remley, of Massillon, and the careful inspection of the product by the mayor, the service director, and the engineer of that city."

BRICK PAVEMENT IN NEWFOUNDLAND.

It is an interesting commentary on the brickmaker's art, that the most northeasterly highway of commerce,



Brick Paved Streets at St. John's, New Foundland.

on the American continent, is of brick. This thoroughfare is Water street, the Broadway of St. John's, Newfoundland.

All of Newfoundland looks to St. John's, as all the United States look to New York as its "show city," and scarcely a peasant but manages, at least once a year, to go to the city of St. John's. Then, he must ride in the street cars, threading this thoroughfare; look through the shops, and set his watch by the town clock in the courthouse. Used as he is to the country roads, he marvels particularly at the smooth, clean street of brick, which constitutes the King's Highway.

MORE ON THE DETROIT MUDDLE.

Our Detroit correspondent advises us as to the report of the paving committee in the controversy which has been carried on there for the past three months and which has not yet been settled. He states:

"The brick question which has agitated not only De-

troit, but brick manufacturers throughout the country for a couple of months, has again come up. A special paving committee appointed by the president of the Board of Commerce has returned a report which finds these conditions:

"A large percentage of Detroit's brick streets are in poor condition.

"This is due practically to two causes:

"The Department of Public Works has laid brick on bad foundations.

"The Department of Public Works has bought a great deal of bad brick during recent years.

"There is no well defined organization in the Department of Public Works.

"There is no adequate inspection of paving materials."

Some of the principal recommendations of the commerce committee are:

"That the wholesale use of creosoted block, as recommended by the commissioner of public works, should not be resorted to

"That the Medina block be used for heavy traffic.

"That, because of the necessity for pavements that will give horses a firm foothold in slippery weather and obviate skidding of motor cars, that brick be laid on, say, every fifth street.

"That a paving department be organized in the public works, and that it be in charge of a competent engineer, who will have sole charge.

"That a paving repair department be organized."

The report of the committee is voluminous, but the suggestions named above embody it. The brick question has come to be a touchy one in this city, and frequent exaggerations by the newspapers have sort of tired not only the people but the manufacturers, the officials, the special committeemen and the brick manufacturers themselves. It would seem from the special committee's report that the end was in sight. Brick makers are unanimous in hoping it is.

BRICK REPLACES CONCRETE.

The Lexington, Ky., "Leader," of September 23d, states: "The concrete filling which the Lexington Railway Co. recently put down between the tracks at the Main and Limestone street crossings and other places along the tracks, in Lexington, have proved unsatisfactory and are being replaced with brick and blocks of Georgia granite. A small force of workmen have been engaged for two days at the work of tearing up the concrete and filling in the space with brick and Georgia granite blocks. The concrete does not stand the wear of wagons as well as the brick and granite, especially that which has been used alongside the rails on all the recent street improvement work."

AMERICAN ASSOCIATION FOR HIGHWAY IMPROVEMENT.

The first annual convention of the American Association for Highway Improvement will be held at Richmond, Va. November 20th to 24th. The first meeting will be addressed by President Taft and will be held in the city auditorium. Other meetings will be held in the auditorium of the Jefferson Hotel. Among the subjects discussed will be the building of a highway from Washington to Atlanta, in which brick makers should be interested, as there is a possibility that this road might be constructed of brick. Many prominent representatives of firms manufacturing road machinery, will be present at the meeting.

CONTRACTS LET FOR NEW PLANT.

The Albion Shale Brick Co. has secured the expert services of the L. E. Rodgers Engineering Co., of Chicago, to plan, lay out and supervise the construction of its new plant at Albion, Ill. That the plant will be built in the most modern and approved methods, goes without saying, as the Rodgers Engineering Co. build none but plants of the highest character. The plant will have a capacity of 100,000 paving block per day and it is thought it will be ready for operation sometime this fall or early winter. The plans include a 20-kiln waste-heat dryer of the Rodgers type, and we understand that Harvey Haigh has been engaged to construct a Haigh continuous kiln, 408 feet long, 86 feet wide and 20 feet high. The interior will be lined with fire brick and will be equipped with an electric trolley which will facilitate the handling of the product. We understand the Bonnot Co. of Canton, O., will install a considerable portion of the machinery.

BIG ORDERS BOOKED.

Two orders, totaling nearly ten million paving brick and block have just been booked by the Corry Brick & Tile Co., of Corry, Pa. An order for 8,000,000 block has been secured from the New York State Highway Department, and one order for 1,600,000 for roadwork nearer home. The former order is to be used in road improvement between Buffalo and Rochester, N. Y., and is said to be the biggest order for paving blocks ever placed by the New York State Highway Department.

President George Dunham, of the Corry Brick & Tile Co., has announced that at a meeting of the stockholders of that company it was voted to increase the capital stock of the corporation from \$100,000 to \$200,000, which will be used in increasing the capacity of the Corry plant, of which DeWarren DeRosay is general manager.

The Saginaw (Mich.) Paving Brick Co. has recently shipped large consignments of brick to Ludington, Flint, Bay City, Muskegon and Reese, Mich., during the past few weeks. They are also supplying their wire-cut brick for several new homes in Saginaw.

THEY STAND THE TEST.

The Purington Paving Brick Co., of Galesburg, Ill., broke all previous records of the company during the month of September during which time 7,753,000 brick were made, which makes a daily average of 310,000 for the 25 working days in the month. The Purington Company is the second largest employer of labor in Galesburg, 619 men being employed at its plant. The brick from this plant were tested recently by the street committee at Galesburg with the following results: nine brick before the test weighed 84 lbs. and 14½ oz. After the brick were tested and reweighed, they were found to weigh 73 lbs. exactly, showing a loss of only 11 lbs. 14½ oz., or a loss of 14 1/14 per cent. The city ordinance provided that the brick should not lose more than 18 per cent in the test, the Purington brick exceeding the test limit by 3½ per cent.

BIDS WANTED.

The Bureau of Yards and Docks, Navy Department, Washington, D. C., will receive proposals until November 4, 1911, for vitrified brick paving at the United States Naval Torpedo Station, Newport, R. I. The same bureau will receive proposals until November 11, 1911, for quarters for magazine attendants at the United States Naval Magazine, Mare Island, Cal. Plans and specifications can be obtained upon application to the Bureau of Yards and Docks or to the commandant of the naval station concerned.



POTTERY STATISTICS FOR 1910.

During the fiscal Federal year of 1910, statistics show that the domestic pottery industry of the United States experienced its most prosperous year. In a lengthy report just completed by Jefferson Middleton of the United States Geological Survey the following information concerning this ceramic industry is made public:

The product was valued at \$33,784,678, a gain of \$2,735,237, or 8.81 per cent over 1909. This is the greatest value ever reached, exceeding by \$2,343,794, the record for 1906. Compared with earlier years the increase is yet more striking. In 1809, the value of pottery products was \$17,250,250. The product for 1910 was greater by \$16,534,420, a gain of 95.85 per cent. During the same period the imports increased 40.73 per cent.

The product of most importance is white ware, which includes general household ware, though it is produced in only eight states. This product was valued at \$14,780,980 in 1910, compared with \$13,728,316 in 1909. Ohio was the leading producer, \$9,730,408 for 1910. West Virginia was second and New Jersey third. White ware composed 43.75 per cent of all pottery products.

Chinaware, the highest grade, though comparatively small in value of production (\$1,962,126), showed a gain of \$195,306. It was produced in but three states. New Jersey was the leading state, reporting ware valued at \$1,131,412. New York was second, and Pennsylvania third. China constituted 5.81 per cent of all pottery products.

Sanitary ware was valued at \$6,758,996, a gain of \$769,701 over 1909. It was produced in nine states. New Jersey was by far the largest producer, \$4,955,066. West Virginia was second and Indiana third. Sanitary ware formed 20 per cent of all pottery products.

Porcelain electrical supplies were produced in ten states, of which Ohio was the leader, \$1,277,144. These wares composed 11.23 per cent of the total value of pottery products.

Red earthenware was made in 33 states to the value of \$854,196, Pennsylvania being the largest producer. Ohio was second and Massachusetts third.

Stone ware and yellow and Rockingham ware valued at \$3,796,688, were made in 28 states. This is the only branch of pottery production that showed a decrease. Ohio, as for many ears, was the leading state in the manufacture of these wares, reporting 43.84 per cent. Illinois was second and Pennsylvania third.

Ohio is the leading pottery producing state in the Union, reporting a value of \$14,794,712, or 42.31 per cent. New Jersey was second, with \$8,588,455, or 25.42 per cent. West Virginia was third, with \$2,675,588. The five leading states—Ohio, New Jersey, West Virginia, Pennsylvania and New York—produced 88.60 per cent of the total.

Imports of pottery were valued at \$11,127,405, an increase of \$520,193, or 4.90 per cent. The exports of pottery, which are confined almost exclusively to the lower grades, increased \$177,994, or 20.61 per cent.

The proportion of domestic production to consumption, says Mr. Middleton, was the largest ever recorded—77.08 per cent—nearly four-fifths of the pottery consumed in the United States being of domestic production.

It has been estimated that in 1875 the proportion of domestic production to consumption was only about 15 per cent. The large increase has been brought about by the efforts of the American potters to improve their wares and make them equal or superior to the imported.

POTTERY NEWS.

A new decorating machine is to be placed on the market at an early date, one invented by J. M. Silverman of East Liverpool, O. Several years ago W. H. Dedrick invented a decorating machine, now in successful use, which is on the order of a job printing press. Both flat and hollow ware is decorated on the Dedrick machine, while on the new Silverman machine, flat ware will be made a leading feature. The machine will be placed on the market very generally, during the next few months, and it will be made in East Liverpool.

The capital stock of the New Lexington Pottery Co., of New Lexington, O., has been placed by W. H. Brown, one of the incorporators at \$50,000. This will be the first pottery to be built in that section of Ohio, which is west of the Zanesville market. Mr. Brown is said to be from the Crooksville district, where he has been heavily interested in the manufacture of stoneware. Construction on the new plant will be begun this year, according to report. Associated with Mr. Brown are W. H. Byron, F. P. Childs, George T. Drake, E. W. Lewis, George A. Forquer and T. J. Tracy. The firm will manufacture white ware, stoneware, tile and other ceramic products, the extent of which is to be determined later.

Contracts have been awarded by the Ransbottom Bros. Pottery Co., of Ironspot, O., for the construction of a three-story brick addition to their general stoneware pottery, which is the largest plant of the character in the United States. Improvements contemplated here will, it is said, cost upwards of \$25,000.

William A. Search and R. W. Spencer have formed the Kyoto Pottery Co., at Fredericksburg, O. Art pottery and art tile will be made by this new company, which is beginning business with an authorized capital of \$50,000.

The Canonsburg, (Pa.) Pottery Co., is again about to expand its business by the erection of additions which will about double its present capacity. Six decorating kilns are to be built and an additional glost kiln is to be built. When these improvements are completed, the new plant will have a capacity of 13 kilns or 30 kilns when the total capacity of the concern here is counted. The company is headed by Will S. George, president of the W. S. George Pottery Co., of East Palestine, O., who operates two large potteries there.

At Louisville, Neb., a scheme has been launched for the building of a pottery. Philip Kahler, of Denver, was sent to the Louisville district to inspect large deposits of clay, and samples have been taken to Denver for final tests. There was a pottery in Louisville, Neb., several years ago, but it failed, owing to improper management, it is said. Kahler is a well known pottery operative, being a turner by trade, and having worked in several eastern plants.

J. G. Carter of Trenton has assumed the management of the Charles Howell Cook plants, at Ford City and Kittanning, Pa., known as the Pennsylvania China Co.

RECENT TRADE LITERATURE.

"Building Progress" for October published by the National Fire Proofing Co., Pittsburg, Pa., is up to its usual grade of excellence, the leading article being a description of the new Municipal Building, New York City, which is fireproofed throughout with over 30,000 tons of terra cotta hollow tile made by the National Fire Proofing Co. The walls of this building will be of granite and brick—the floors and partitions are of hollow terra cotta tile, making the building practically fire and sound proof. Another interesting and profitable article is "Accounts and the Contractor" giving some excellent advice along the line of cost keeping.

The "Labor Saver," published by the Stephens-Adamson Mfg. Co., Aurora, Ill., for October contains an excellent description of the new conveying system manufactured by this company. The editorial states that there is no talk of dull times or slack business around "S-A" shops, as the entire plant is being rushed to get out a large number of orders. Among the orders is a large consignment of belt conveyors for the department of the Interior for the U. S. Reclamation Service, which is building an immense dam at Fallon, Nev. The contract for this equipment consists of five carloads of machinery. The Ashland Iron & Mining Co., of Ashland, Ky., has also purchased a carload of machinery. Besides these many other large orders are being filled.

The October "Publicity Magazine", published by the Under-Feed Stoker Co., of America, shows some excellent illustrations of the advantages to be derived by the Jones Stoker equipment. The "Jones" has passed the experimental stage, as is evidenced by the number of plants which have been equipped with this system, by the use of which a steady dependable steam supply is assured with a reduction of fuel consumed and boiler room labor.

OPENS ENGINEERING OFFICES.

The many friends of Mr. E. R. Buckley, who will be remembered as the founder of the Wisconsin Brick Manufacturers' Association, will be glad to know that he has opened an office as a consulting mining geologist and engineer at No. 1364 Peoples Gas Bldg., Chicago, Ill. Mr. Buckley was identified with the Wisconsin Geological Survey for three years and with the Missouri Bureau of Geology and Mines for seven years, and has for four years been a professional mining engineer. He is thoroughly conversant with the exploration and development of mining properties and the valuation of mineral deposits used in the manufacture of structural materials.

PLANT TO BE REBUILT.

We are creditably informed that the Acme Co-Operative Brick & Tile Co. recently incorporated in the state of West Virginia, which purchased the plant of the Webster City Brick & Tile Co., at Webster City, Iowa, will entirely rebuild same, making it one of the most modern plants in Iowa. The new plant when rebuilt, will have fourteen, thirty-foot, round, down-draft kilns, a horizontal tile machine and a steam press for making large tile and sewer pipe. The equipment will be strictly modern in every respect. The officers of the new company are: B. H. Ward, president and general manager; Wm. H. Shaw, superintendent; J. F. Carey, secretary; C. W. Soule, treasurer.

All the hollow tile that will be used in the new addition being built to the plant of the G. H. Williams Co., at Erie, Pa., will be furnished by the Pennsylvania Fireproofing Co., of that city.

THE WILLIAMS INFANT.

Williams crushers and pulverizers are known in the clay industry from one end of this country to the other and in fact throughout the world. The clay trade, however, only knows the name Williams because that name has supplied it with one of its greatest needs, in the most satisfactory manner, and few of our readers realize the extent and the importance of the business carried on by the Williams Company. At the big plant of this company in St. Louis are all kinds of crushers and pulverizers for various uses in a dozen different lines of industry and it is interesting to note the many uses to which these machines are put.

One of the latest products of this concern is called the "Infant." This little grinder is only twelve inches in diameter and yet it will grind one thousand pounds of shelled corn in sixty minutes or a ton of coffee in the same time. It will grind six hundred pounds of wheat screenings so fine that they will blend with shorts and never be known. It will chew up sisal, from which rope is made, into a fine powder in the most satisfactory manner. It is doing fine work in Colorado in the manufacture of onion salt, a line of business which few know about.

What Williams crushers and grinders have done for the clay business, they are doing for other industries, and this concern far from standing still, is continuing to grow and develop and is constantly putting forth efforts to improve its service to the public.

In the many hundreds of clay working plants in this country and Canada where the Williams Crusher is in use, the inventor and manufacturers are thought of only as benefactors to the industry.

BIG CONCRETE VIADUCT COLLAPSES.

With a crash that could be heard all over the city, the reinforced concrete viaduct over the C. A. & C. R. R. at Akron, Ohio, collapsed on October 11th, crushing the freight houses underneath like pasteboard. The structure was erected only a few years ago at a cost of \$250,000.

RECENT FROST SALES.

That the clay working industry is gaining in prosperity and that the products of the Frost Mfg. Co., of Galesburg, Ill., are continuing in their popularity, is evidenced by a report of recent sales made by that company of dry pans, engines and boilers.

Among these sales are the following: Barr Clay Products Co., Zumbrota, Minn., 5 9-ft. dry pans and four 72-in. x 18-ft. boilers of 150-lb. pressure; Streator Paving Brick Co., Streator, Ill., one 9-ft. dry pan; Edward Ford Plate Glass Co., Toledo, O., two 9-ft. dry pans; White Hall Drain Tile Co., White Hall, Ill., one 9-ft. dry pan; The Falk Co., Milwaukee, Wis., one 9-ft. dry pan; Sheffield Shale Tile Co., Sheffield, Ill., one 9-ft. dry pan and one 72-in. x 18-ft. boiler of 150-lb. pressure; Tramp & Tramp, Audubon, Ia., one 9-ft. dry pan; Davenport Brick Mchy. Co., Davenport, Okla., one 9-ft. dry pan; Hamilton Clay Mfg. Co., Hamilton, Ill., one 9-ft. dry pan, one 16 x 20 engine, one 72-in. x 18-ft. boiler of 150-lb. pressure; Indianapolis Terra Cotta Co., Indianapolis, Ind., one 9-ft. dry pan; Mexico Brick & Fire Clay Co., Mexico, Mo., one 9-ft. dry pan, and the Commonwealth Steel Co., St. Louis, Mo., two 9-ft. dry pans.

It is interesting to note the number of Frost boilers included in this list. These boilers have proved of especial value for clay working plants because of their superior construction and durability. In fact, Frost boilers are known the country over for their good service, long life and small expense of maintenance.

HEATING AND VENTILATING.

In a 94-page book bearing the title "Heating and Ventilating," the Green Fuel Economizer Co., of Matteawan, N. Y., has brought together the information required for the designing and proportioning of hot blast outfits for heating, ventilating, drying, etc. The book contains some two or three dozen tables of temperatures required in rooms for various purposes; heat transmission through building materials; heat given off by occupants and by lights; standard sizes of hot-blast heaters; frictional resistance of air washers; relative humidities; humidities and temperatures throughout the United States; amounts of air required for ventilation; equivalent air pressures, velocities and horse powers; total weight of air at various barometers and temperatures; pressure and power consumed in friction; speed, capacity and power of steel plate fans; friction of air through hot blast coils, etc.

The text takes up not only the usual details relating to the construction of fans, heaters and heating and ventilating systems, but also the calculation and designing of piping systems, giving for the latter two methods differing somewhat, viz.: that used in the office of the Supervising Architects at Washington, and that proposed by Riltchel and covering the resistance of sheet iron pipes and of angles, bends, branches, grills or registers, etc. There is also a chapter on the loss of head of air flowing through orifices and equivalent orifices, in which is presented a method of combining the resistance of ducts in parallel and series connections analagous to the Ohm's and Kirchhoff's laws for electrical circuits.

Another chapter gives the result of an extensive series of tests upon Green's "Positiv-flo" steam heating coils, by means of which heaters of suitable sizes may be selected for any given duty. The general illustrations in the book include not only views of buildings equipped with heating and ventilating apparatus, built by the Green Fuel Economizer Co., but also detailed plans, elevations and "ghost" views showing the actual arrangement of the fans, heaters, piping, outlets, etc. Copies of this book will be sent upon request to architects, heating and ventilating engineers and others concerned with the purchase, design or operation of heating plants.

HANDLING GRITTY WATER.

For many years the pulsometer has found favor for dredging work, coal mining, sand suction, etc., because it has no rubbing surfaces and therefore experiences no difficulty in handling gritty water. To overcome the terrific cutting action of high velocity water containing very hard flinty matter, the Pulsometer Steam Pump Co. announces that pulsometers are now being cast by a special patented process wherein the shell, while of the usual cast-iron construction to give ample rigidity, are completely lined on the inside with a surface of carborundum. Sand blast and other abrasive tests would seem to indicate that this lining will stand, almost indefinitely, the wear of water, moving at high velocity and containing anywhere from 40 to 69 per cent of the hardest kind of solid material. Special information on this type of pump can be had by addressing the Pulsometer Steam Pump Co., 17 Battery Place, New York City.

CLAY CRUSHERS.

By I. M. Justice, Dayton, Ohio.

Since the manufacture of clay working machinery began in this country about fifty years ago, the clay crusher has been an integral part of such equipment. These machines have been designed and constructed in two gen-

eral classes, known as smooth-roll clay crushers, and lug-roll clay crushers, the latter being more commonly called disintegrators.

All smooth-roll crushers, as they have been built by the various firms have a great similarity. Many of these machines have been geared and driven with a single belt and the adjustment of the rolls had to be provided for in the teeth of the gears; a method most unsatisfactory because it is contrary to all mechanical law in the operation of gears.

These machines, as a whole, were built with rolls of small diameters, usually differing, wide faces and very slow motion or low speed. When the rolls in these machines became worn, there was no means of repair except by supplying complete new ones.

Disintegrators have differed to some extent from the smooth-roll crushers. All disintegrators, as made by every firm in such line of manufacture, have always had the greatest similarity and no one firm has ever had much on the other in these machines.

Disintegrators have always been made with two rolls, one a small roll having cutting lugs or cutting bars, and the other smooth and somewhat larger. Standard sizes for small rolls will range from 12 in. to 16 in. diameter and from 12 in. to 24 in. face, and run at a speed of 700 to 1,000 R. P. M. while the larger roll would range from 16 in. to 24 in. diameter and 12 in. to 24 in. face, and have a speed of from 100 to 200 R. P. M.

It is to be seen that all disintegrators have about the same rolls as smooth-roll crushers: small diameters, wide faces and slow speeds except for the cutting rolls. Smooth-roll clay crushers and disintegrators have been used generally and extensively for many years not because they were ideal or satisfactory for the purpose.

After twenty-five years of active practical experience, we have become convinced that the old principle of small diameters, differential diameters, wide faces and slow speeds in roll clay crushers is in a large measure fundamentally wrong. We observe that in other lines where roll-crushers were used for crushing materials much harder than clays, the rolls were never like the old type described above.

In our travels, in foreign lands, we observed that crushers were used in clay plants, but they were not like our old type of crushers. We took note that in France, Spain and Cuba they used crushers with large diameter rolls, medium wide faces and medium speed. We finally discovered a crusher in operation in this country which embraced the new principle as applied to clay crushers and to which we have been gradually coming. The new principle which has been discovered, applied and proven, is rolls of large diameters, narrow faces and high speeds. Both rolls may be smooth or one may have cutting bars. These rolls run with a slight differential in speed to produce a tearing effect on the clay as well as crushing it. These rolls must have detachable tires as a matter of economy. What is needed most, at this time, in the clay crusher line, is a machine of the type last described, but such a machine must be better made and of better material and workmanship than has been the common practice in the construction of clay crushers, in the past.

The new crusher must have heavy coil springs backing up the boxes on one roll shaft so as to prevent breakage in case any foreign substance should get into the machine by accident. A crusher, of this type, when presented to the trade actually containing the proper material as to quality and the product of skilled mechanics honestly performed will be accepted and command a price fully commensurate with the value of the machine offered.



Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers— Market Fluctuations and Industrial Prospects

SPARKS FROM THE WIRE.

The National Sewer Pipe Co. has been organized at Augusta, Me., for the purpose of manufacturing sewer pipe, drain tile, ducts and other clay products. The company is capitalized at \$500,000. The officers are E. J. Pike, president; L. J. Coleman, treasurer, both of Augusta.

The Enamel Vitrified Brick Co. was incorporated at Toledo, Ohio, October 11th, with a capital stock of \$500,000. The company will build a plant near Toledo, on the Terminal Belt, with a capacity of 40,000 brick per day. It is stated that the company also anticipates building nine other plants. The incorporators are J. J. Urschel, Geo. C. Penney, Andrew Malinowsky and A. E. Smith.

We understand that the Wedron Sand & Clay Products Co., recently incorporated at Aurora, Ill., will not, at present, undertake the development of the clay on their property but will engage in the sand and gravel business only.

It is stated that the plant at Wiley, Col., which has been idle for some time, will soon be put in running order ready for operation.

The kiln shed at the plant of Frederick Stocker at East Saugus, near Lynn, Mass., was destroyed by fire on October 14th, causing a loss of several thousand dollars. The fire was caused by sparks from the kiln ovens which are fired with wood.

The plant of the Cary Brick Co., Newton Hook, N. Y., was visited for the second time in three months with a fire on October 9th, which destroyed a building containing the brick molding machinery and a drying rack. The fire is thought to have been started by tramps who had been seen around the plant before the fire.

High waters on the Uncompahgre River washed away a portion of the Delta (Col.) Tile & Brick Co.'s plant.

The Queisser-Bliss Co. of Cleveland, Ohio, reports sales of golden Turkestan rough brick for facing a large apartment building and Hanover shale brick with black headers for another flat building, also an order for genuine Oriental brick for a large residence to be built on Euclid avenue has been received.

We are informed that plans have been made for a factory building to be erected by the Los Angeles China Manufacturing Co. The site, it is said, will probably be at Dominquez, Cal. The construction will be of brick and the cost will be about \$60,000.

The Hazel W. Coal Mining Co. has been incorporated at Rock Island, Ill., with a capital of \$30,000 to conduct a coal, brick and building material business. The incorporators are: Charles E. Fearons, E. C. Walsh, Jr., and N. M. Walsh.

We are informed that W. E. McLoon, superintendent of the Glencoe Lime & Cement Co. of St. Louis, has been endeavoring to find suitable clay for the manufacture of firebrick in Arkansas. It is stated that he has capitalists interested who will invest money in the enterprise providing he finds suitable material.

The Canton Porcelain & Clay Specialty Co. has been organized at Canton, Ohio, with a capital of \$1,500 for the purpose of establishing a tile factory.

C. B. Hawley, of Morocco, Ind., has purchased the brick and the industry of W. O. Gourley at Paxton, Ind.

An arbitration board assessed a valuation of \$700 a front foot for the property, occupied by the Evens & Howard Fire Brick Co., which belongs to an estate and is under lease for 100 years, but is revalued every four years by a board of arbitration.

The Plasterton Dry Wall Block & Terra Cotta Co., of Burlington, N. J., has been incorporated with a capital stock of \$125,000, to manufacture terra cotta hollow building blocks, brick and other clay products. The incorporators are G. C. Gunn and L. S. Gunn, of Burlington, and N. Morton, of Florence.

We are told that estimates have been submitted to the stockholders of the National Sewer Pipe & Tile Co., of Webster City, Iowa, for the construction of a plant to cost \$197,880. The company which is authorized to have a capital stock of \$250,000 has elected the following officers: J. L. Kamrar, president; H. R. Dodge, vice-president; P. W. Hearn, secretary; L. A. McMurray, treasurer. The members of the board of directors are K. Kamrar, H. R. Dodge, P. W. Hearn, L. E. Crowter, J. W. Hittle, W. J. Zitterell, W. A. Johnson, J. L. Peterson and A. O. McConnell.

The Laurel Brick works, New Orleans, La., is installing a repress machine and will begin the manufacture of pressed brick on a large scale. The company is at present turning out 25,000 common brick and gives employment to sixty men.

The property of the Cayuga Brick & Coal Co. of Cayuga has recently been purchased by capitalists of Petoskey, Mich., S. S. Puckett being one of those actively interested. Twenty men have been put to work getting the plant into shape for a heavy winter's work. One hundred men will be employed when the plant is in operation. Business men of Cayuga are much encouraged over the prospect and anticipate a considerable boom in business as a result of the opening of the plant.

Articles of incorporation have been filed for the San Diego Unit Brick & Tile Co. The capital stock is placed at \$50,000. The incorporators are: D. J. Mastin, Chas. A. Olmsted, J. H. Babcock, J. H. Carter and A. E. Morgan.

The Richard Murray Brick Co. has been incorporated at Berlin, Conn., with a capital stock of \$50,000. The incorporators are Johanna M. Murray, Richard B. Murray and Katherine O. Murray.

CEMENT SLUMP EFFECTS EASTERN BRICK MARKET.

New York, October 21.—A new era has dawned for Eastern common brick. It can now compete with cement on an even basis and use the same kind of weapons its adversary employs—printer's ink. Already burned clay has entered the realm of landscape art and cement, sometimes accredited with sole proprietorship of formal garden adornment, now finds architectural terra cotta a menace to its popularity. Labor has joined hands with Eastern brick makers to enforce safe and sane brick construction in all municipal construction work and the manufacturers themselves, through the Greater New York Brick Co. are perfecting details of a plan to popularize all kinds of brick in general, but common brick in particular for all kinds of building by advertising their product as absolutely fire-proof and not dependent for its permanency and reliability upon the workmanship of cheap, unskilled and careless labor.

The Hudson river brick manufacturers have at last decided that a well defined, competently conducted educational campaign for common brick is needed to save the industry, as a whole, and to protect the building public against deception and fraud in many kinds of construction work. But this decision probably never would have been reached had not John B. Rose realized that the disruption of the Portland cement market in the East and the recent collapse

of several large concrete structures, notably the Austin, Pa., dam and the Black river reservoirs, were psychological incidents that would help make such a campaign decisive. This campaign is expected to begin within thirty days, or by the time the winter season opens and it will be carried on indefinitely.

But that is not the only happening of importance in the brick market here within the last fortnight. The demand has increased, prices have gone up steadily and by the time this letter reaches "Brick and Clay Record's" readers this commodity will be \$7.00 a thousand, afloat, and will go to dealers plus only the nominal charge of twenty-five cents or so to defray cost of covering, demurrage and surveillance. Furthermore, an absolute guarantee was given to dealers and consumers that the winter price would not go over that figure. This assurance alone, doubtless was responsible for the splendid buying movement that began just after this announcement reached the ears of the dealers and at the close of the week ending October 14, 90 cargoes were purchased and orders were in hand for every bargeload of brick lying at wharf here, en route to this city from the up-river yards, and even some of the barges half loaded were taken.

Jobs that have been held back pending a possibility that brick prices would go down before they went up, when news was circulated of the new price that was to become operative on Monday, October 16, were hurriedly pushed ahead, the week preceding that date. Big jobs that opened up down-town, took all the brick available and the result was that on Monday, October 16, the sales continued quite as heavily as they did the week before. The dealers, who had been postponing stacking, came into the market and found it short, which added to the pandemonium. Here is where the new selling arrangement proved its usefulness. When dealers were scurrying around, pell mell, to get in under the new price to become effective on the 16th, not one agent, as far as is known, tried to inflate the price. Without an efficient monitor, the market would have buckled under the strain and somebody would have been tempted to take advantage of the situation. The price was rigid at all times, thus giving every interest an even chance to buy or not, as it saw fit.

The advantage that will accrue to the Hudson river manufacturer, by reason of a definite fixed price for his commodity in the New York market, this coming winter, will be a welcome change from the old indefinite fluctuations of the market.

The brick manufacturer is to receive \$7.00 flat for his brick all winter, whereas, at no time last winter did he receive anything like that price and only during eight weeks in the winter of 1909. The importance of this information to the brick makers along the Hudson river cannot be over-estimated, for it means payments of dividends, though small, instead of going to the banks for further accommodation.

Available Supply Up-River Sufficient.

The available supply of Hudson river common brick, up the river, is ample to take care of all requirements this winter and until the new brick begin to arrive next year. During the last week, there has been considerable uneasiness in the trade regarding the reports that the early closing down of the brick plants in the Hudson valley might result in a brick famine in the spring. Investigations fail to show any danger of such a contingency arising. A careful count by an investigator whose figures were made available to your correspondent, showed that there were in shed and on barge at yards between Haverstraw and Mechanicsville, on October 16, 45,000,000 marketable brick. I have computed the weekly reports of arrival and sales of common brick in this market from January 1 to October 14 and find that the total number of brick barges that registered in this market for sale from the Hudson river district was 1,878, of which 1,866 were sold, leaving twelve bargeloads on hand in this market on Monday, October 16. Figuring 325,000 brick to a bargeload, I find that the total sales of up-river brick here this year so far amounts to 606,450,000. If there are still 450,000,000 brick in shed, the total output for 1911 has been 1,056,450,000. Compared with outputs of former years the showing is a good one. The totals are given below:

1905	.....1,200,000,000
1906	.....1,218,784,000
1907	..... 875,979,000
1908	.....1,064,000,000

1909	.....1,198,000,000
1910	.....1,102,265,000
1911	.....1,056,450,000

There would appear to be no cause for apprehension regarding the supply available for next spring, although preliminary reports of the quantity of brick on hand were conflicting and gave rise to rumors of impending famine conditions.

To Turn Out a Better Brick Than Ever.

Speaking of present conditions and the outlook, President Rose, of the Greater New York Brick Co., which is composed of a majority of the manufacturing plants along the Hudson, intimated that it would be the aim of the individual companies forming the selling organization in this city, to turn out a better brick than even that manufactured and sold now and to proclaim this fact through the proposed publicity campaign. He said:

"When we stated the objects of our organization to you, in July, we left out one of the most important aims of this company. That was, to put brick in the position of importance that rightfully belongs to it. Every new enterprise, involving new and untried methods, encounters difficulties and there are always criticisms. Our case was no exception to that rule. But we are emerging from the depths of unsupported endeavor and are reaching a stage of co-operation.

"Therefore we have decided to give brick the same advantage that cement has had. You cannot expect reforms in a few months in a condition that has existed longer than you or I can remember. A few of us have recognized the importance of advertising brick as a product. I guess I was the first to put that idea into practice, but one worker cannot change a custom any more than one swallow can make a summer. We needed co-operation; team work, if you want to designate it that way, and it has taken time to cause others to see the need of a general change in methods of conducting the manufacture and sale of common brick.

"During the strenuous times since our organization we have been quietly working to this end. We have studied the results of the extensive advertising of cement and we have looked into the results of advertising front brick. Every detail has been considered and we have become convinced that the way to help our industry is to show the consumer how to use brick and at the same time impress upon him that when he uses brick he builds permanently and, if he uses scientific methods, he builds cheaper than if he uses any other so-called fireproof material.

"We are a company with a small capital. It does not exceed \$100,000. Our purpose is to cheapen the cost of brick manufacture so that the manufacturer can derive the profit that he is properly entitled to. To do this, as I stated in July, we will purchase supplies in bulk, and generally reduce the cost of handling the finished product here. We will not and have not arbitrarily fixed prices. It has been regulated upon a systematic basis governed by supply and demand and upon exigencies of the seasons. The dealers and the consumers have seen fit not to look upon it in that light, perhaps, but it is nevertheless so.

"We now propose to tell the people about brick as a product. We recognize the necessity of working on a broad-gauge plan and the building public of today and tomorrow is the audience we are going to address. We must disabuse the public mind of its impression that 'Cement is King.' Judging from recent experience in certain concrete structures, we are almost led to think that 'Cement is Jester.'

"But eventually we must make better brick. Not that Hudson river brick is not good. It is as near excellence as brick can be made with the kind of equipment we use up the river. In other words we must establish a plane of common efficiency in all plants to meet the exactions of building progression. We have good talking material even now, and so we propose going ahead with our publicity campaign on the text: 'Better quality, fair count, uniform prices and prompt delivery.'

"Our company stands for progression, not stagnation. The Eastern brick maker has not, as a body, represented business progressiveness. Antiquated methods of manufacturing, shipping, selling and delivering have characterized the business. It had to be modernized and that is the sphere of this company to put its members upon a modern commercial plane, which in itself means the elimination of all cost leaks and at the same time improve the quality of the finished product.

"As for the present condition of the market, it is not bad. There is a healthy demand as proved by the fact that the

dealers, as a rule, have not yet (October 17) begun to stack, although they have been buying brick heavily of late. We have plenty of brick to supply the winter's demands and you can say for me that prices will not go above \$7.00, afloat, this winter, plus the customary covering charges."

Architects Well Pleased With New Arrangement.

Several architects were asked how they viewed the proposed change in conditions. They thought it timely. In nearly every case they said they thought it would simplify matters greatly to be able to positively know what the price of common brick was for some time ahead, as it would enable them to figure estimates much closer. Ernest Flagg said the tendency in all building material lines was toward fixed price levels covering certain seasons. At the office of McKim, Meade & White, it was said that there was a much broader field for the use of common brick if the applications could be shown to the general public as the uses of cement are shown. Still another prominent architect said that prompt deliveries would be a welcome innovation.

An example of what can be accomplished for brick by a definite campaign for publicity, is shown in the advertising of bids for some of the twenty-one new fire houses that are to be constructed in this city. It will be remembered that they originally were to have been built of concrete exclusively. The Greater New York Brick Co., through its counsel, Frank M. Patterson, protested against the use of this material, upon the ground that it was a discrimination in favor of one kind of material to the exclusion of brick. It was urged that cement would give a more artistic appearance. Right here is where the work of the brick makers struck home. The counsel showed that more artistic effects could be procured by the use of brick than without it and the Fire Commission decided to reconsider the matter.

The result was that awards for four of the twenty-one fire houses were let, the specifications calling for both exterior and interior walls to be of brick construction, instead of merely brick exteriors, as originally asked for by the Greater New York Brick Co. This means a big victory for brick.

With a competently organized publicity campaign more victories of this kind can be scored for brick and it is the purpose of the Greater New York Brick Co. to arouse public interest in this commodity by just such aggressive business-getting campaigns as this. The moral effect of such victories upon the average builder cannot help but be far reaching.

Current Market Conditions.

The current market for Hudson river common brick is more active than it has been at any time so far this season. Ninety cargoes went out last week at \$6.50 and the sales were still active this week at \$6.75. The Raritan river market is strong, with sales running about a quarter of a dollar below the Hudson river prices. Connecticut common brick continues to come into this district, at \$6.50 to \$6.21½ a thousand, but owing to the cost of cartage, it has so far not been generally used in sections distant from the New York, New Haven & Hartford Railroad tracks.

The movement of front brick is somewhat slower, but prices have held firm, although now and then one hears of a shaded figure for very desirable work. The terra cotta fireproofing industry is reporting a fair volume of business just now and a fairly good building season. This doubtless was stimulated by the tremendous contract taken by the National Fireproofing Co. for supplying the partition blocks and floor arches for the Woolworth building. The architectural terra cotta industry is also active, there being a very liberal volume of prospective operations calling for this material. In this connection it might be stated that the Atlantic Terra Cotta Co. has just placed on the market some very artistic pottery for formal garden decoration and foyer adornment, all of which is made from the same material that is used in the manufacture of its faience.

Chicago Brick Manufacturers New York Guests.

New York had a chance this week to show its capacity for hospitality to Western brick manufacturers. It was not long ago that a company of Gothamites "Twentieth-century" to the city made famous by Mrs. O'Leary's cow and were so royally entertained that they decided that they would never ask their hosts to Father Knickerbocker's balliwick until they had an attraction that was worth while. The close connection between a world's championship baseball series and a "bat" naturally suggested brick manufacture and so when they heard that R. C. Penfield was expecting as guests Mr.

and Mrs. Thomas Carey and Miss Carey and Mr. and Mrs. Schlake and Miss Schlake, of Chicago, some of the companies identified with the Greater New York Brick Co. induced the president of the American Clay Machinery Co. to let them share the honor of entertaining his guests. The result was there was a trip to the Hippodrome, the best seats at the Giants-Athletics game at the Polo Grounds and the best that New York afforded as long as they were here.

A. E. Aldrich, Robert Main and even Mr. Penfield himself did their best, they admitted, but they still feel that that debt of hospitality incurred by them in the Windy City is not yet paid and the brick makers of the Empire City are still watching and waiting for the arrival of stray brickmakers from Chicago in order to "square" themselves.

THE WINDY CITY.

Chicago, Ill., Oct. 28.—If the weather holds out favorable for a time there will be at least a portion of the earlier activity promised in building lines realized in Chicago. While it is admitted that the season is pretty well advanced, there is still a possibility of a nice demand for clay products, particularly those entering into the building industry. There has been a decided resumption of demand lately, and the plans are tending to give the material men plenty to do until the cold weather has set in for good.

If a comparison were to be made it could easily be seen that in spite of the complaints that are made as to the increase in business the clay men are more fortunate than many others. Business, in general lines, while fair, is lacking in the vigor that is so eagerly looked for. Then there is always a decrease in the number of building projects planned when the industrial activity is not as great as it should be. The increase that has come now, even though late, is a welcome one and is being made much of by the clay manufacturers and dealers.

There has been a very favorable demand for common brick, and the yards in and about Chicago are still working to capacity. The stocks on hand, while not large, are ample to meet all demands, and still keep a reserve stock in sight. The plants will be kept in full operation until the very cold weather, and in this way will be able to stock up for an early spring delivery, should the demand continue strong through the winter and increase in the spring. The number of apartments, factories and residences, which demand so many common brick, has been very large this fall, and this has assisted the brick men to a considerable degree. Prices have not changed, and the future offers no likely change in this respect.

The face brick men are in better spirits over the changed conditions in the past month. Orders are coming so rapidly now as to keep them moving lively, and it requires more than an ordinary rush to keep everybody happy and supplied with material as rapidly as they demand.

Sewer pipe and kindred lines, locally, are not overly active. In outlying sections there has been a very fair demand, but there has been little to interest the manufacturers in this city. With prices rather below what they should be, and a very fair demand, the situation continues a puzzle as it has in the past. The plants are active and will operate right along during the cold weather.

The fire brick business is strong, and the demand continues very favorable for this line. No lack of orders is noted, which is considered a good indication of the condition of the country as regards the general business.

One can hear only favorable reports from the architectural terra cotta manufacturers. This is an age of quick action, and this clay specialty fits in to the general scheme nicely. It is one of the late and increasingly popular forms of building construction which has been meeting with much favor locally, as well as in many other sections of the country. Its merits are being more generally appreciated, as is evidenced by the material increase in the demand. Its future is certainly assured, and contractors and builders are glad to have a home supply to draw from.

Reports from the office of the National Brick Co. give every indication of a nice demand for building brick. The plants of this company are all being operated, and while the supply of brick on hand has been very well kept up, the demand has been larger within the past few weeks

than for some months prior to this time, and the company feels much elated over the fall business.

Mr. Bonner, of the Bonner & Marshall Co., states that the call for face brick is now quite active. Orders that had been held up for several months, are making the situation as pleasing as one could hope for at this time of the year, and the company has ample orders on hand to keep it active for some time.

Thomas Connelly & Co. say the demand for sewer pipe and flue lining locally is rather less than it should be. However, the foreign orders have been so great as to keep the plants in full operation, and they are in reality behind with the orders. For this reason they are working with a vim, so that as much stuff can be shipped out as possible before the cold weather comes. The company is not doing much here, devoting itself more to the outlying sections for orders.

Mr. Reed, president of the Chicago Retort & Fire Brick Co., says that the orders at his plant have been steady, and that there has been no decrease thus far. The plant has been working to its capacity and there has been no cause for anxiety as to orders. The improvements made at the plant in the past several months have largely increased its capacity which has proven a material help, permitting things to move along much more satisfactorily. Mr. Dietrich, secretary of the company, has recently returned from a vacation, where he shot several things besides game. He finds his health much improved by the trip.

Mr. Curtis, of the Curtis Brick Co., says that the conditions in the building brick industry are favorable for the fall. Business has been showing a steady improvement of late, and the orders are making up to a considerable extent for the lack of activity during the summer months. They have a fair stock of brick on hand and are enjoying a very much better outlook for the future.

The S. S. Kimball Brick Co. report business prospects much improved. Mr. Matz states that there is a great improvement in the situation as regards the face brick industry. They are in reality kept in a rush to keep things moving along, and the fall business is making up with them for a considerable portion of the inactivity of the summer months.

The Chicago Hydraulic Press-Brick Co. is rushed with orders for many styles of face brick. Mr. Wheeler states that there has been a notable increase in the demand and that the fall promised well for the industry, the question now being to take care of the orders that are plentiful.

THE HAWKEYE STATE.

The new brick and tile plant at Belle Plaine, Ia., which is being constructed by the Reliance Brick & Tile Co., is rapidly nearing completion and a number of the working force have brought their families to that place to reside. It is said the plant will be one of the most complete and up-to-date in the state of Iowa.

The Gethman brick yard at Gladbrook, Ia., has closed down for the season. It is stated that two round kilns will be torn down and rebuilt this fall at that plant.

We understand that the Peerless Brick Co., which began operations in Waterloo, Ia., about two months ago, is turning out between four and five thousand brick daily and has all it can do to fill its standing orders.

KANSAS NOTES.

Mr. W. P. Crum, an old resident of Cherryvale, Kans., who has been connected with the Coffeyville brick plant for sixteen years, has accepted a position with the American Equipment Co. Chicago will be his headquarters.

W. A. Stuckey of Coffeyville has acquired the controlling interest of a new brick plant which has been installed at Avant, Okla., and expects to take charge at once. The buildings are completed and most of the machinery set up.

The Independence, Kan., "Star" states that the brick produced at the plant of the Independence Brick Co. are the prize brick of that locality. Mr. Jiencke, the manager of the company, recently received a telegram from Wichita, Kan., which stated: "Brick stood 16 per cent

test. Ship as fast as you can." This is a good indication of the quality of brick produced at this plant.

At the annual meeting of the stockholders of the Chanute (Kan.) Brick & Tile Co. the members expressed themselves as well pleased with the year's business which has passed, and a dividend was declared, while many other plants were running only half-time. The members of the old board of directors were re-elected. W. B. McFarlane has been engaged as superintendent for another year and E. P. Bodle will continue as general manager and salesman.

NEWS OF THE NORTHWEST.

The Chehalis Brick & Tile Co., of Chehalis, Wash., have a good record for continuous operation, as since the plant was first opened in 1902 it has been running continuously with the exception of unavoidable shut-downs on account of weather conditions for a few days. The company is considering increasing its capital stock in order to build a continuous kiln and add other desirable improvements for increasing the capacity of the plant. These plans will no doubt be carried out in the near future.

Brick manufacturers at Dickinson, Scranton and Kenmare, N. D., have found that lignite is particularly well adapted for use in burning brick because of its freedom from smoke and soot in combustion, and its relative low cost as compared with other fuels, one ton of lignite being found equivalent to one cord of ordinary wood. The time required for burning a kiln of brick with lignite is from eight days to two weeks, according to the dryness of the brick when set in the kiln and the quality of the brick required. Many of the brick manufacturers mine lignite on the same property from which the clay is procured.

AMONG THE NEW ENGLANDERS.

The New England Brick Co. has closed down its Cambridge yard for the season. The past year was one of the best the company has ever had and over 16,000,000 brick were produced this year.

It is reported that the New England Brick Works will probably be reorganized and continue to do business as before.

The Baltimore Brick Co. declared a regular quarterly dividend of 1 per cent on its preferred stock, payable November 1st.

Ashland, Me., another wooden town, has been wiped out by fire, according to the Taunton, Mass., "Gazette," which further states "each such calamity hastens the day when in this country, as in Europe, there will be more buildings built of brick and stone and less of inflammable materials."

OUR HOOSIER FRIENDS.

Indianapolis, Ind., October 27.—Brick men are just closing an excellent season and the outlook for the winter months is said to be good. There has been a vast and increased amount of large building this season, but a decrease of about twenty-five per cent is reported in the business from small dwellings, as compared with 1910. It is stated the 1911 volume of business will be much in excess of that of last year. Brick prices are holding their own and it is predicted will remain steady throughout the winter.

As regards other clay products, including sewer pipe and fireproofing, the situation is not so good. It is said these lines are demoralized and apparently for no good reason. The situation is attributed to a fight between Eastern manufacturers. No immediate change in the situation is expected.

A number of large contracts are to be let within the next few weeks. The Fletcher Realty Co. is on the point of letting a contract for a twenty-one story office building of brick and steel construction. The officers of the Merchants National Bank have plans in hand and will soon let contracts for a sixteen-story bank and office building. The great Council of the Independent Order of Red Men, with offices in the Indiana Trust Building, has tentative plans for a twelve-story brick hotel building, to be erected at the northeast corner of Capitol avenue and Market street, at a cost of approximately \$300,000.

A. E. Davis, local representative of the Western Brick Co., reports some large contracts. He has closed a contract for supplying brick for a college building and dormitory at St. Mary's of the Woods, which includes four million common brick and 250,000 gray pressed face brick. He also has a contract for brick for three new fire engine-houses in this city, which includes 20,000 matt brick, 575,000 common brick and 50,000 red wire-cut brick.

The Brooklyn Brick Co., whose plant is at Brooklyn and office in this city, reports it has been turning out 52,000 brick a day, since March 15 and that it looks as though this pace would be continued to about January 1. A fair business is reported, although trade is a bit duller than it was a few weeks ago.

At the local office of the Adams Brick Co. it is stated that the Company's plants at Martinsville and Veedersburg are still running to full capacity and will continue to do so for several weeks, at least.

The Marion Brick Works has closed its plant at Marion and Montezuma for the winter, after an excellent season. Trade at this time is reported a trifle dull.

Perry & Bock have been awarded the sub-contract for the brick work in the proposed six-story building to be erected at Meridian and Georgia streets for Hibben, Hollweg & Co., wholesale dry goods merchants.

The Indiana Pressed Brick Co. has moved its local office in this city from 504 to 533 Indiana Pythian Building.

A contract has been let by the board of public works to the Indiana Paving Brick & Block Co. for 100,000 alley brick and seconds at \$10.00 per M., the brick to be used by the street commissioner in repairing brick pavements.

The Board of Public Works of Indianapolis has selected brick as the material to be used in the construction of the new city hospital, which is to be built unit by unit and will ultimately cost about \$2,000,000.

The Underhill Brick & Tile Co. is making extensive improvements at its plant near Rockport, Ind. The improvements include a 150-h. p. boiler, a 110-h. p. engine and machinery to double the capacity of the plant. New kilns are also being erected which with the new steam-heated dryer will materially increase the capacity of the plant.

The Ft. Wayne Tile Co. has been incorporated at Ft. Wayne, Ind., by P. Koehler, F. Kintz and J. H. Koehler. The company is capitalized at \$7,000 and the purpose is to manufacture and sell hollow clay ware.

At Brazil, Ind., work is progressing nicely on the construction of the new Federal Building, which is to be faced with brick made by the Brazil branch of the Hydraulic Press Brick Co.. A new court house is to be built there next year, which local brick men feel should be built of brick, as the clay factories are virtually what keeps the town alive.

CONDITIONS IN PHILADELPHIA.

Philadelphia, Pa., Oct. 28.—General trade conditions in Philadelphia show little change at the present time, but there seems to be a slight increase in activity in some parts of the city, especially in West Philadelphia and in the northeastern section. These sections are going ahead very rapidly and the builders are having good sales for moderate size houses, and we must not forget that there are some very large operations going on up in Germantown and the suburbs, all of which create a demand for more or less burned clay building material.

There are quite a few large apartment houses being built in different parts of the city, and it is astonishing how quickly they are occupied after their completion, the demand for this style of building being much greater than the supply. They are now finishing a row of six-room apartments at Logan, in the northern part of the city, called "The Gables," and we understand that nearly all of the apartments have been rented.

The report among the trade seems to be, that the demand for building materials is not what it should be, but in some cases the builders are waiting for their materials the manufacturers not being able to supply them fast enough, but we are glad to say that the outlook for the future is much better than it has been for sometime past.

OUR BUCKEYE LETTER.

Columbus, O., Oct. 26.—Although the winter season is near at hand, the brick and sewer pipe manufacturers of

the Ohio district continue to receive orders. Much of the business coming in is for immediate delivery, although in all instances, this cannot be complied with.

Sewerpipe manufacturers in the Upper Ohio Valley territory are continuing operations full time, and every plant in that district is pressed with work with a possible exception or two. These exceptions are plants which have been idle throughout the summer.

"The present condition of the brick trade from our standpoint is, we think, a little out of the ordinary. We are practically sold up for the next four months on both our Zanesville and Cleveland products. Our shipments for this year will exceed by fifty per cent that of any previous year in the history of the company from this division," announces F. H. Chapin, of the Hydraulic Press Brick Co., of Cleveland. "The outlook for the early part of next year appears to be good. That is about as far as anyone can safely anticipate conditions in this business."

The first meeting of the stock subscribers of the new Ashtabula Shale Brick Co. was held in Ashtabula, Oct. 13. Plans have been gone over which call for the erection of a plant to cost in the neighborhood of \$50,000. It is possible that construction will be completed so the making of brick can be started early in the year.

A one-story brick and tile factory will be built at Mansfield by the Mansfield Clay Products Co., from plans prepared by an official of this concern. Foundations have been completed.

In order to take care of a larger stock, additional sheds are being erected at the brick plant of the Heinisch & King Brick Co., at Portsmouth.

Never in the history of the company has business been so rushing with the United Brick Co., of Conneaut. The concern is being besieged with rush orders, calling for immediate shipment, with the result that the company has been compelled to increase its working forces.

C. H. Barienbrock, who has been connected with the Pittsburgh office of the National Fireproofing Co., of Pittsburgh, has been appointed as resident manager of the office and yards of the company in Columbus and is now in charge of the Columbus district. The yards and offices of the company are at West Broad and Anson streets, and Mr. Barienbrock is making a number of changes looking toward the improvement of the local business of the big company.

Parties from Canton are said to have been looking over the property and plant of the Champion Brick Co., at Wellsville in Columbiana county, with a view to purchasing the plant. This concern is in the hands of a receiver, an aftermath of the failure of the Silver Banking Co., of Wellsville. The plant is an exceptionally well built one, and brick for building purposes are made from a vein of Kittanning clay.

The kilns at the plant of the Pressed Brick Co., at New Lexington, which were slightly damaged by fire recently, have been repaired.

Ben F. Pease, of Chardon, has bought a half interest in the John Becch brick and tile business, and the manufacture of building block and other ceramic products will also be added. Twenty acres of clay lands have been purchased.

THE LONE STAR STATE.

Austin, Texas, Oct. 24.—Generous rains all over Texas during the last few weeks have greatly improved the building situation. There is an increase of activity in all lines of building trades and this condition is not confined to the larger cities, but is felt in the smaller towns and in the rural communities. It is stated by brick manufacturers that there is an increase in the demand for building brick and that the prospects are favorable for a very heavy business in that line this fall.

No one thing has more to do towards this stimulation of building operations than the large cotton crop which Texas has this year, it being estimated that the total production of the state will reach or exceed 4,000,000 bales. It is not only the money that comes from the sale of this crop that makes good business, but it is the enormous sum in the aggregate that is paid out for picking the staple. On the basis of a 4,000,000-bale crop and at the average rate of 75 cents per 100 pounds for picking there will be placed in circulation from this feature of the harvest alone \$15,000,000. Prac-

tically all of this money is quickly placed in circulation. Its effect on business is immediate and very noticeable. Pending the earlier uncertainty as to the outcome of the cotton and other crops in Texas there was a laxity in building operations, but not as much so as during the usual summer season.

There is now in prospect many buildings and industrial enterprises that will require the use of enormous quantities of brick. This is particularly true in San Antonio, Dallas, Houston and Fort Worth. Brick manufacturers report a very good year so far and they are encouraged with the favorable prospects that confront them.

One noticeable feature of the building situation all over the state, as regards the use of brick, is the increase in the demand for a better quality of this material. Not so very many years ago people were not very particular as to the appearance of the material that entered into the construction of their business buildings and homes, but now along with the development of the state and the betterment generally in civic affairs there is exercised more artistic taste in the architecture of the buildings, the quality and appearance of the material that enter therein. Perhaps this change in conditions is due largely to the improved facilities for manufacture installed by the owners of the plants. There have been great strides made in brick manufacturing in Texas during the last few years, and the state now boasts of plants that are the equal of those of any other state in the quality of the material they produce. More attention is being given to ornamentation in building architecture than formerly in this state. The effect of this is pleasing and adds to the beautification of the towns.

Texas towns have had a marvelous growth, during the last few years, and with the present splendid cotton crop and other favorable conditions it is considered that there is no good reason why their progress and development should be interrupted.

It is also noticeable that there is an unusual amount of building of manufacturing plants being done at this time. This is especially true in South Texas, in the Gulf coast region and in the lower Rio Grande valley. An illustration of this feature of upbuilding may be noted in the three large sugar mills, each requiring an enormous quantity of brick, which are now being erected in what is known as the Brownsville country. In that section there are many new towns and each of them is characterized by the substantial brick business blocks that have been erected within the last year or two.

The demand for brick in the newly settled parts of Texas has caused a number of large brick manufacturing plants to be installed and these concerns are said to be carrying on large and profitable industries, where only a short while ago there was nothing but cattle ranges. Everything considered, the brick making industry in Texas is on a very good footing and has splendid prospects for the future at this time.

At the Moore Brick plant, Palestine, Tex., a kiln has recently been taken off which contained 200,000 brick, said to be as hard as granite.

The Ruby Coal Mine & Brick Co. has been incorporated at Oklahoma City with a capital of \$100,000 by R. C. Pratt, Atwood, Tenn.; W. K. Richenbacker, of Topeka, Kans.; B. G. Patterson, E. J. Deu Pree and J. T. Wiggins, of Oklahoma City, Okla.

A company recently organized is that of the Rio Delta Clay Product Co., of San Benito, Tex. The capital stock is \$10,000 and the incorporators are Sam Householder, W. D. Carpenter and E. W. Watts.

THE TWIN CITIES AND THE NORTHWEST.

Minneapolis, Minn., October 27.—The fall of the year so far shows but little change here to the advantage of the brick manufacturers. A dull season has been followed by a moderate fall. The one encouraging feature being that the excessive rains of the past two months make it nearly certain that drain tile will be much in demand again next season. It might be in demand this fall, were it not for the depression which exists, because of the inability to carry on threshing and fall work, plowing and marketing. The rains have done wonders for the soil for next season's crops, but they have also worked trouble to the crops which were not under cover. Much grain was damaged in the shocks because of the rain, which seems to be making up for lost time in the past year. But with it, the low places

are filling up; the swamps are refilling, and the lakes and streams are returning to normal and drainage will be needed for low places.

Governor A. O. Eberhart, of Minnesota, has issued a call for Fire Prevention Day, for November 8. At that time, a meeting will be held in St. Paul to consider the question of averting a portion of the mighty fire loss which is sustained every year, amounting to \$2.71 per capital. Minnesota's percentage is higher than the average so the call is especially germane. Of course, all this is but a reinforcement of the common expression that fireproof construction is better than fire prevention, and it will work in harmony with the propaganda for brick construction.

One item of clay construction that seems to be in better demand this season is clay silos. From different parts of the Northwest comes reports that clay silos have been selling well and freely. The good production of fodder this season has made silos an important matter, and the stock will do so much better on ensilage that farmers are taking hold of silos of permanent construction. Many have had sufficient experience with wood stave silos, and want no more. The permanent clay silo is the one which commands their attention now.

A complaint has been filed with the Minnesota State Railroad and Warehouse Commission by the Farmers' Brick & Tile Co., of Austin, Minn., that discriminatory rates are made on its product through the state, in favor of similar products made in Iowa. The company asks an adjustment of rates from Austin through the state.

Harold Johnson, of the brick and building material firm of Johnson, Jackson & Corning Co., has recently made a trip into North Dakota by automobile, where he learned some new facts regarding the tenacity of mud.

A further chapter in the troubles of the Fairmont Drain Tile & Brick Co., Fairmont, Minn., has developed. Now come several stockholders with an action against the company to recover the amount of their stock subscriptions on the ground of fraudulent representation in securing their subscriptions. The alleged fraudulent representation consisted in a claim that the company had a suitable supply of clay at the site. It has developed, upon attempting to use the clay at the plant, that it contains so much limestone that it cannot be used. The company has been seeking a new supply from clay banks in the vicinity, and has made extended tests of the different clays. These different beds are under option and the approval of the stockholders will be asked before a deal will be closed for any land.

Building permits for nine months in Minneapolis show a nice gain over the same length of time last year, \$11,956,000 against \$11,826,000. The September comparison was \$1,002,850 this year against \$1,170,035 last year.

St. Paul building permit totals for September were \$845,931 against \$664,768 for the same month of last year.

The course in trade training which has just been instituted in St. Paul jointly by the Builders' Exchange, the St. Paul Institute and the board of school inspectors, is to include a course in brick masonry. This course is one which is probably more needed than any other single course. If the brick manufacturers are to have their product used in the future, it is altogether essential that they have some method of training young men to lay brick properly. The apprentice system has gone to pieces and young brick masons are growing scarcer and scarcer.

A large new brick yard is approaching completion at Pengilly, Minn., near Nashwauk, Minn., on the Iron Range. The company has completed a large dry kiln, 100x300 ft. in size, and is installing a complete outfit of up-to-date machinery in the plant. This is the second large brick plant to go in on the Iron Range this season, although the other is on another Iron Range, north of this, at Walsh, close to Tower, Minn. Both plants are modern and up-to-date and capable of turning out a high grade quality of brick. Since the lumber has been well cut off in this section and prices are advancing, there is a growing demand for brick, and these plants will doubtless be able to come into a good demand from the start. Owing to the business from the iron mines, shipping facilities are first class, and the country in the vicinity of both plants is well supplied with railroads. This gives them an advantage which many plants in comparatively new countries do not have.

S. J. Bowler, architect, has resumed practice in Minneapolis, after being out of business for some time past. He has opened offices in the Boston Block.

For the season of 1911 the output of Henry Hess & Son, brick manufacturers of St. Cloud, Minn., will be not less than 2,000,000 brick, all of which have been sold.

The Enterprise brick plant at Wrenshall, Minn., has shut down after a successful run for the season. The output was nearly 10,000,000, about all of it having been sold. A number of improvements to the plant are under way. They include a sand mold machine, which will enable the plant to produce sand mold brick, as well as the wire cut.

Braun Bros., of Cassville, Wis., have been trying a new method in better brick burning which they believe will result in a better product.

George Heil, of Thielman, Minn., will handle brick hereafter in connection with his other business.

IN SMOKY PITTSBURGH.

Pittsburgh, Pa., Oct. 27.—Indications point to the fact that during the next few years, starting in 1912, clay product manufacturers will turn their eyes to the Pittsburgh district as they never did before. The rumor is current that millions of dollars' worth of improvements are being contemplated, and the record of this line of work is now being assembled by the officials of the Pittsburgh Industrial Development Commission.

One of the largest improvements will be the cutting down of the "Fifth Avenue hump." This task will include the purchase of a considerable amount of sewer pipe.

Street paving will also come in for a large amount of consideration in the suburban districts, and plans for these changes are now being completed.

The statement has been made to "Brick and Clay Record's" correspondent that upwards of \$50,000,000 worth of municipal improvements will be begun in 1912, and once begun, the expenditure of this vast sum will continue unabated until all plans have been stamped "O. K." and filed away as "completed."

A report has been circulated here that Chicago and Philadelphia men are interested in the proposition to erect a brick plant at Newhope, near Boylestown, Pa. Property is said to have been secured, but the character of the product that is contemplated is not known.

The brick contracting firm of Will & Houck, of Pottstown, has been dissolved, but the business will be continued by James Will. The firm has been in the business for about eight years and has been doing a large business.

For the purpose of developing a large deposit of fire clay, a charter was granted Oct. 17 to Quinn & Co., of Clearfield, Pa. John Quinn and Thomas J. Kelly, of Clearfield, are at the head of the new company, and it is possible that consideration will be given to the erection of fire brick later in the season.

After improvements have been completed, the brick yards at Cowansville, near Kittanning will resume operations. All yards in the Kittanning district appear to have a file well filled with new business which will cause the plants to be operated until late in the season.

William Rider is in charge of the erection of a new brick plant at Mt. Union. Foundations for the kilns are completed and the foundation for the main building is also completed.

Fire caused damage estimated at \$4,000 to the brick and pottery plant of the Richard C. Remmey Sons Co., at Philadelphia recently. The plant will be improved and placed in operation as soon as possible.

F. S. Fish of West Middlesex, Pa., has formed the Fireproof Interiors Co., and a charter has been applied for under Pennsylvania laws. L. C. Kolm will be in charge of the manufacturing department.

Brick and slow burning construction will be used by the S. B. Chartiers Grocery Co., in the construction of its large retail grocery building at Third avenue and Grant street. The concern was recently burned out and the new building is the result.

A new brick plant will be built at Grapeville, 25 miles east of Pittsburgh by the Jeannette Brick & Stone Co. Private plans will be followed. The main building will be 50 by 100 feet and the dryer house will be 30 by 120 feet. The company contemplates operating a 12-kiln plant, but is only erecting three kilns at the start.

Although fire destroyed the brick plant of the Volant Brick Co., at Volant, O., Treasurer J. W. Neff of New Castle, Pa., has announced that the corporation will rebuild, but on a more extensive scale. The new manufacturing building will be constructed of brick at a cost of \$5,000.

The Dillsburg (Pa.) Brick & Tile Co. is about ready to resume operations in its new plant, at Dillsburg, which cost about \$150,000.

Brick manufacturers throughout Pennsylvania have been following the path first tread by their Ohio brothers in filing complaints with the State and Inter-State railroad commissions. The latest in this state is the Bickford Fire Brick Co. of Curwensville, Pa., which has complained to the State Railroad Commission regarding the rate charged by the New York Central & Hudson River Railroad, claiming that an exorbitant price is charged and more than is charged by the same railroad company for the same kind of shipments to other shippers.

Scott A. White, with offices in the Lewis Block, has been awarded the contract for the ornamental terra cotta products which will be used in the construction of the School of Dentistry building for the University of Pittsburgh.

So far this season the Waynesburg Brick & Stone Co., at Waynesburg, has sold over 2,000,000 building brick.

KANSAS CITY AND THE SOUTHWEST.

Kansas City, Mo., Oct. 26.—Kansas City is still the dumping ground for Kansas gas-burned brick, and the market is flooded most of the time to such an extent that prices are holding steady at a point where the manufacturers can make nothing out of the shipments. While no figures are available, it is stated that the consumption of brick in this city up to the present time this year has been far below the normal, and judging from the common brick coming here from Kansas the same conditions exist in all other parts of the country reached by the manufacturers of that state, for it is a well known fact that as long as they can sell to other points they do not make shipments here at the low figures they ordinarily get when the market is glutted.

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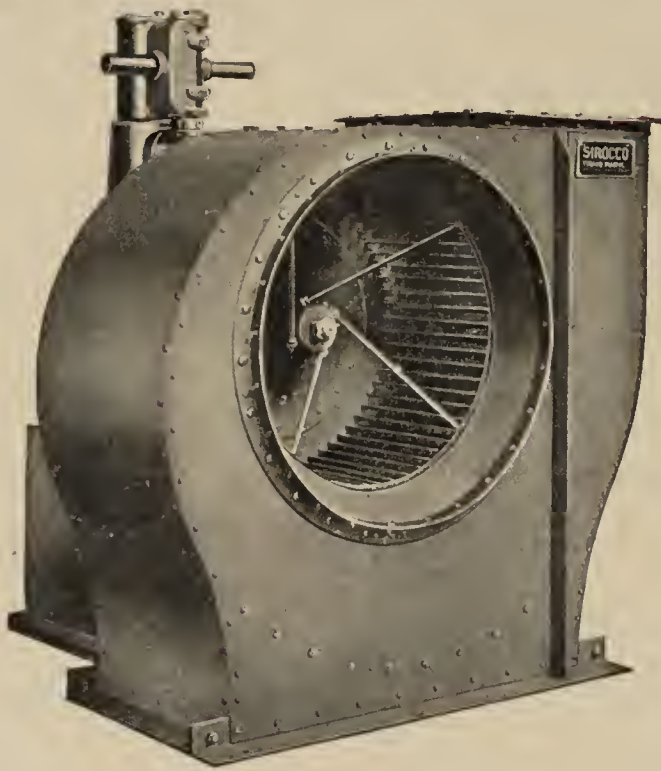
Table of Contents

	Page		Page
Buffalo-Williamsville Road.....		Mammoth Sewer Pipe Plant Projected.....	385
.....Frontispiece		A New Oil Engine—The Boyd Press in Can- ada	386
A Revolution in Brick Paving—A simple Invention and Its Wonderful Result. By M. K. Zimmerman.....	363-370	The Superintendent—Nothing New Under the Sun—Fire Clay Kiln Damper—Home Made Aerial Tramway.....	387-388
Impressions of a Non-Clayworker—Clay Manufacturers Making Extensive Plans for Exhibits at the Clay Show.....	371	Paving Brick Industry—Vitrified Brick Pavements. By W. P. Blair.....	389-391
Wisconsin Association Gets Results—British Planning National Association.....	372	Drain Tile and Drainage—Hints for Laying Drain Tile—Concrete Silo Explodes....	392
Danger in Explosives.....	373-376	General Pottery News.....	393
Formal Opening of Southern Plant.....	377-378	Double Order Booked—Mississippi Plant Burns	394
The Wellington Machine Shops.....	379-381	Trade Reviews—News from the Northwest— The Sunny South—The Chicago Situa- tion, Etc.....	395-400
Editorial Comment—The Sales End of the Business—Stretching the Truth.....	382		
Time for Contest Extended.....	383		
Temperature Pendants	384		

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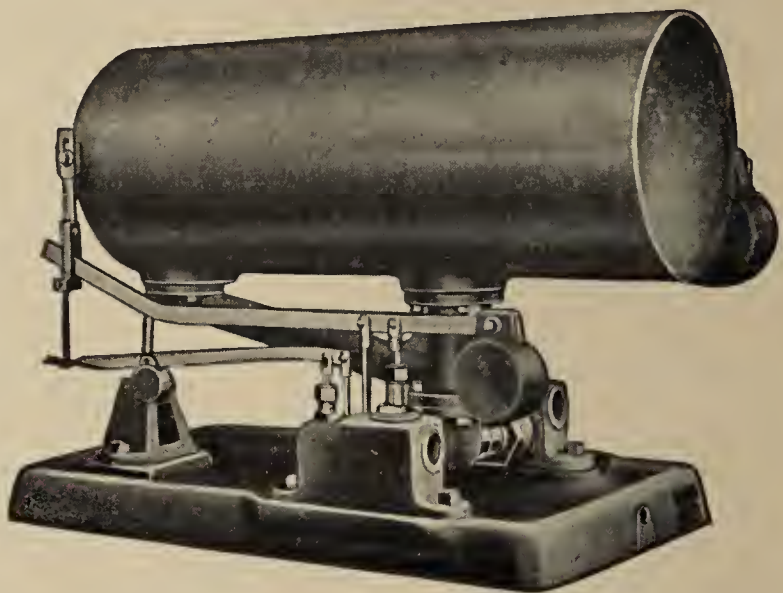
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After first coat of filler had been applied



VOL. XXXIX—No. 10

BRICK

AND CLAY RECORD



NOVEMBER 15, 1911

A REVOLUTION IN BRICK PAVING

How the Development of the Dunn Idea for Making of Wire-Cut-Lug-Paving Block Has Created New Conditions in This Branch of the Clay Industry—A Simple Invention and Its Wonderful Results

By M. K. Zimmerman

When Frank B. Dunn of Conneaut, Ohio, some three years ago approached several paving brick manufacturers and builders of brick machinery, laying before them his idea for the manufacture of a paving block without the use of the repress, his suggestions were received with much skepticism and even ridicule. So firmly had

was obliged to overcome every kind of obstacle and has made his fight for recognition single handed against all opposition, not the least of his difficulties being the limited capital at his command.

Today, seven large paving brick plants are using the Dunn method successfully, manufacturing upward of two



Where the Dunn Idea Was Developed. Plant of the United Brick Co., Conneaut, O., of which Mr. Dunn was Formerly Manager and which Later Took Up the Production of the Dunn Wire-Cut-Lug Block.

it been impressed on the minds of the members of the industry that the only feasible process for the manufacture of vitrified paving block required the use of the repress, that Mr. Dunn's plan did not receive the consideration which it deserved and right from the beginning of his campaign for the adoption of his system of paving block manufacture, he met not only lack of encouragement from all sides but the most vigorous opposition. He

million wire-cut-lug paving block monthly and a number of other paving companies are now planning to adopt the system. Over four hundred of the leading cities of the country have given the wire-cut-lug block their approval and included it in their specifications for bids for paving material. Numerous city engineers have expressed their preference for the wire-cut-lug block and many leading manufacturers of paving brick and well known au-

thorities have conceded the superiority of the wire-cut-lug block over the repressed block and admit that it is likely to supersede the repressed block entirely for street work.

This wonderful development has been brought about in a quiet way and without any blowing of horns. Nevertheless, Mr. Dunn deserves the utmost credit for the persistence, energy, determination and patience which



Hamburg Road of the New York Highway System Paved with Wire-Cut-Lug Brick.

he has shown throughout his struggle for recognition and his present success is a marked achievement, making new history in the development of the paving brick industry.

We are all creatures of habit and this probably accounts, to a considerable extent, for the idea which has prevailed, that a satisfactory paving block must have rounded edges and must be put through a repress to secure the protuberance necessary to form a spacing lug. The lug on a paving block is, of course, a necessity. Such a block must have some protuberance to separate the blocks from each other, when they are laid in the street, to provide proper spacing for the filler required to bond the block together. Heretofore, this protuberance or lug on the block has been in the form of letters, designating the brand of the block, this brand usually being the name of the company manufacturing same.

Just why the rounded edges were considered necessary originally is not known unless it was because a satisfactory square-edged brick could not be made on the repress. Some have claimed that rounded edges were required to secure a better footing for horses' hoofs but such an idea is unreasonable for the standard construction in brick street paving requires that the interstices between the brick be filled with a cement filler and that this filler be flush with the top of the brick, making an absolutely smooth surface. By doing this, the rounded edges of the repressed brick produce a V shaped opening at the top and when this opening or gutter is filled, the cement filler necessarily forms a thin edge, easily broken. Once the edge of this filler gives way, the edges of the brick are exposed to greater abrasion from the wear of traffic.

The simple wire-cut-lug paving block as perfected by the Dunn system has a square edge making it much easier

to secure a smooth pavement surface with less labor than with the round edge repressed brick, and a better bond. The filler coming up flush and even to the top of the brick makes a perfect bond up to the top edge and thereby preserves the edges of the paving block and makes the pavement smoother and more permanent.

Some of the most remarkable of the evolutions in our industrial progress have been the result of very simple mechanical inventions and this is true of the Dunn wire-cut-lug brick. A slight deflection of the cutting wire around the curved flange on the platen of the cutter results in the cutting out of a protuberance or lug on one side of the block and a groove or indentation corresponding with same on the adjacent block. This system of cutting has proven entirely satisfactory and the block are turned out in perfect shape without ragged edges and entirely uniform in appearance, as is shown by the accompanying illustration—a car of green brick on the way from the machine room to the dryer.

By the use of this contrivance it is entirely unnecessary to put the block through the repress operation and thus this item of cost in manufacture can be eliminated. The block are branded with the name of the manufacturing company by means of a stamp roll passing over the side of the column of clay, leaving the imprint on the end of each block. The necessary grooves on the ends of the block are formed in the auger machine die.

While this brief description of the Dunn method seems simple enough, yet the perfection of the idea required a large amount of experimentation, study and effort. Right at the start Mr. Dunn was told that his idea was impractical for various reasons. One of these was that the deflection of the wires on the cutting table and the resulting strain and wear on them would cause such an amount of wire breakage as to make the practical use of such a cutter impossible. He was also told that sufficiently smooth edges could not be secured for square-edge block cut in this manner. The records of the brick



A Pile of Dunn Wire-Cut-Lug Brick Showing their Uniformity and Space Formed by the Lugs.

plants using the Dunn system prove that the first supposition regarding the wearing of the wires was incorrect. It has been demonstrated that the wire breakage is no greater than on the usual form of cutter and represents no factor of importance. Mr. Dunn overcame the difficulty in securing perfect edges by means of a platen which clamps down on the column of clay, along the edges of which the wire passes, making a perfect clean cut. This will be explained more fully later in this article.

Mr. Dunn was also told, at the start, that city engineers

and municipal and county authorities could not be easily educated to adopt any new form of block to take the place of the repressed block which had already proven so satisfactory. He had to meet the natural opposition prevailing against any radical new idea or innovation, however, the wire-cut-lug block proved so undeniably satisfactory after the most exacting tests that city engineers and municipal authorities have not only been compelled to admit its excellence but in many cases have become so convinced of its superiority that they openly declare their preference.

The idea that a simple wire-cut brick was superior in its character to one which had been put through the repress is by no means new. As far back as 1907, Mr. W.

have had an opportunity to look into the repressing of paving block. Our conclusions are that brick are not as good after being repressed as before, with the exception of the uniformity of the shape. In the fire brick business, however, it is an almost absolute necessity to repress the brick, as uniform dimensions are much desired in furnace building. In breaking the repressed brick lengthwise the structure will be found to contain the most of the coarse particles through the center of the brick. It seems the movement of the particle in brick pushes the finer particles of clay to the outer surface and the coarser particles to the center. In a paving brick the density of the brick is decreased by repressing and it is larger after being repressed than before. The structure of the brick in



Wire-Cut-Block vs. Repressed Block. At the Left is Shown a Dunn Block, Showing the Cleavage, also Showing Uniformity in Construction and Density. At the Right is a Fair Example of Repressed Brick—the Cleavage Showing Lamination Resulting from the Repressing Process.

S. Purington, one of the largest manufacturers of paving brick in the world, declared in a published article that the wire-cut brick gains $3\frac{1}{2}$ cu. in. in size in the process of repressing, showing that clay is not as dense after being repressed as before. He also stated that tests show that wire-cut brick, without repressing, stood four per cent less loss in abrasion tests than did the repressed block. Since this statement, by this eminent authority, other men of technical prominence and practical paving brick manufacturers have made similar statements in favor of the unrepressed paving block. In a letter written by Mr. T. E. Carlisle, president of the Carlisle Paving Brick Co., of Portsmouth, O., he says:

"The writer has watched the repressing of fire brick for a great many years and during the past five years, I

both cases, is broken and to our mind, is not as strong as before being pressed."

Many eminent authorities have admitted that in the process of repressing, lamination is likely to occur that is of serious injury to the character of the block and that a stronger, more homogeneous mass is secured if the wire-cut block is not put through the repressing process. This has been demonstrated by ample tests made during the past year by city and state engineers and others, in which the wire-cut-lug brick, unrepressed, withstood the abrasion rattler test with less percentage of loss than did repressed brick tested at the same time; and under the same conditions. In a number of cases, large contracts have been given out calling for the use of wire-cut-lug block, as they made a better showing in competitive tests.

It is these undeniable facts that have brought about the present situation in the paving brick industry and which makes it quite certain that it will only be a question of a short time before most of the paving block used in this country will be of the wire-cut-lug variety and that the repress, to a large degree, will be discarded in the manufacture of paving brick, although it, of course, will continue to be used in the manufacture of many other forms of brick. It is useless to evade this question or to deny the facts in the case and the writer of this article is simply stating the present conditions without prejudice and without any desire to injure the repress business or detract from its acknowledged value as a part of clay working equipment. This review of the present status of the Dunn system and of the value of the wire-cut-lug brick is offered as a matter of general news and information of interest to all clay workers.

Adoption of Wire-Cut-Lug Block.

The use of wire-cut-lug block as a surfacing material for city streets and country highways is no longer a matter of experimentation but is an established fact. Mr. Dunn, in securing the approval of city engineers and other municipal authorities, naturally met a lack of interest and a disinclination to consider any experimental ideas

had heard of the splendid tests passed by the Dunn brick but he had never seen any before and he was so unfavorably impressed by their appearance that he decided before allowing their use to consult the district engineer from Rochester. The district engineer finally inspected the block but he also was unwilling to assume the responsibility of either accepting or rejecting the block and decided to put the responsibility directly before the members of the State Highway Commission. By this time, things looked rather dubious for the Dunn block and it looked still more dubious when the state official arrived and immediately declared the block were unsuitable and refused to allow them to be laid. In the face of all this, however, Mr. Dunn, with a spirit of determination, for which he is famous, insisted that it was his right that the block should be at least given a trial, and by assuming all responsibility of cost in the matter, he prevailed upon the state officer to permit the laying of a section of the highway with the Dunn block. The contractor vigorously objected, stating that it was difficult enough to lay repressed block which required the straightening of the courses by force every fourth row. He said that they could never possibly get the Dunn block in straight rows. The work proceeded, however, and much to the aston-



Showing the Perfection of a Street Surface Paved with Wire-Cut-Lug Brick. The Evenness of the Rows of Brick are to be Noted and the Manner in which Lugs Form Proper Spacing for the Filling.

Nevertheless, his demonstrations were so convincing that, one by one, the city engineers were compelled to acknowledge his claims and as previously stated, today, over 400 of the leading cities of the country put wire-cut-lug block in their specifications for paving bids. The preference shown by the New York State Highway Commission for wire-cut block is an important chapter in the history of this development. Wire-cut-lug block made at Conneaut, Ohio, were submitted to the New York State Highway Commission in competition with repressed brick for large state highway contracts and the tests showed such remarkable results in their favor that the Highway Commission was bound to accept these block in preference to others. Even up to the time for the laying of the brick for the first large New York highway contract, however, Mr. Dunn had to contend with the greatest of difficulties. On the first of these jobs, near the city of Buffalo, when the first consignment of block arrived, the foreman on the work refused to allow them to be unloaded from the cars, declaring that they were so rough in appearance that he did not dare to commence using them as they appeared entirely unsuitable. He referred the matter to the contractor and after the contractor had taken a look, he arrived at the same conclusion. He, however, put the matter up to the engineer on the job and again, the result was the same. The engineer

ishment of the contractor and all those who witnessed the work, when an inspection was made after the first four rows had been laid, the block were found to be in perfect alignment, requiring no straightening. This was the case with the second four rows, the third, and so on until 93 feet had been laid, when it was found that the last course was just as straight as the first.

This surprise in the eliminating of trouble, labor and delay in the straightening of courses was only the first of the surprises which these experts received. Heretofore the contractors, who were using a ten-ton steam roller for the foundation work, were obliged to use a light roller for rolling the block after they were laid, because the repressed block heretofore used would not stand the weight of a ten-ton roller. Mr. Dunn told the contractor on this job, however, to go ahead with the ten-ton roller, and much to the astonishment of the men in charge, the unrepressed block were entirely uninjured under this terrific weight, and a much better job of rolling was done than could have been done with the lighter roller.

Surprise No. 3 came when the grouting of the roadway was done. The contractor found that, whereas with the repressed brick the pavement had to be grouted three successive times to secure satisfactory results, that with the Dunn wire-cut-lug block only two groutings were necessary, the result being that with much less labor and

cost a perfectly smooth surface was secured. In this process of applying the filler to bond the block together, standard methods in connection with the use of repressed block had required very careful manipulation of the brooms or sweeps in the final grouting, it being required

most perfect piece of street paving in the country and the accompanying illustrations seem to prove the high character of this specimen of brick paving.

What Engineers and Contractors Say.

The best evidence regarding the merit of wire-cut-lug



A Perfect Country Highway—a Bit of the Buffalo-Williamsville Section of the New York State Highway Completed, with Wire-Cut-Lug Brick Requiring Only two Applications of the Cement Filler.

that the sweeps should be used diagonally across the face of the pavement as otherwise much of the cement filler would be swept out of the V shaped opening between the repressed block, leaving bad grooves or gutters between the top edges of the block. No special care was required,

paving block should be the opinions of the city engineers and of paving contractors. It might be well, therefore, to quote a few statements made by prominent engineers and contractors.

J. S. Woodrow, street and road contractor at Warren,



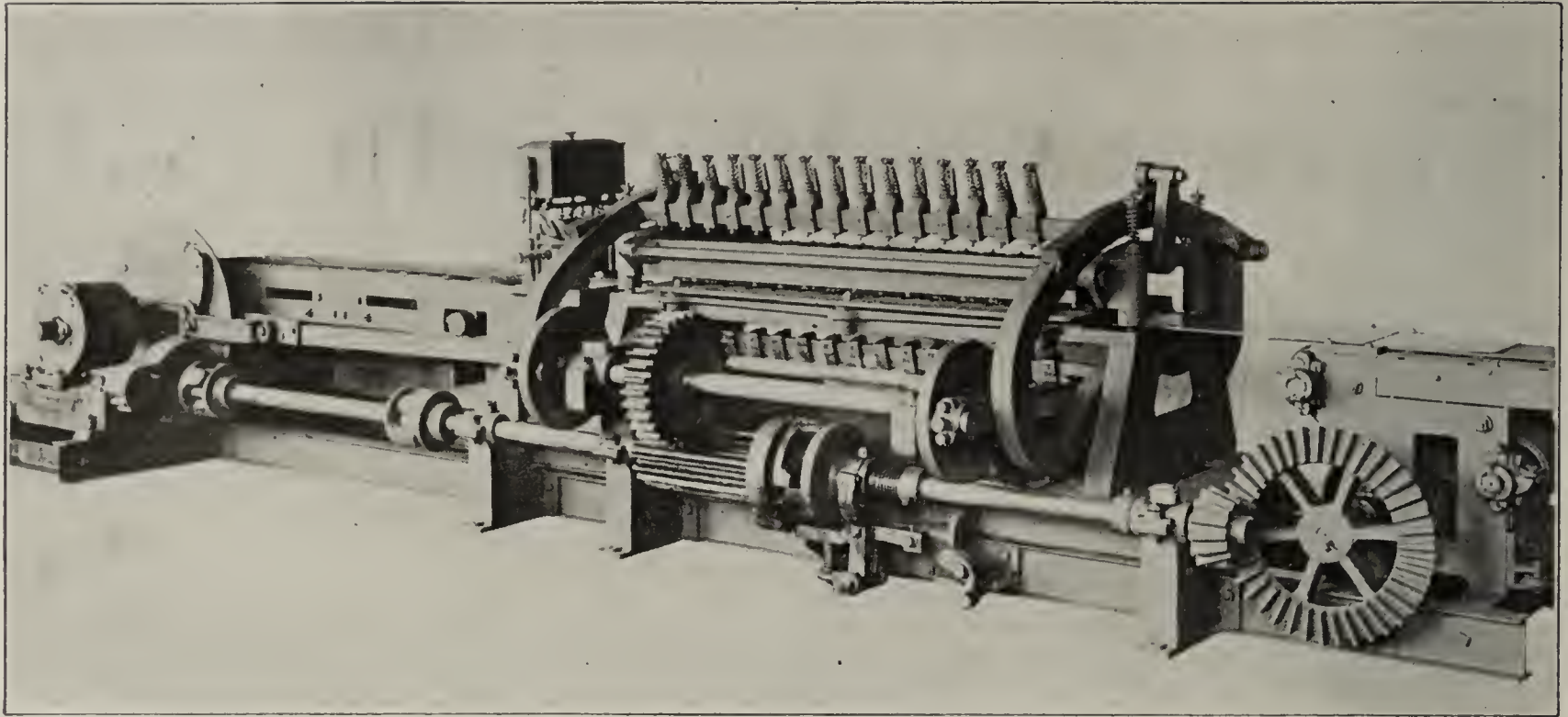
A Wire-Cut-Lug Block Pavement After the First Grouting—Only Two Groutings Required.

however, in the grouting of the Dunn block and a perfectly smooth pavement was secured with much less labor and care.

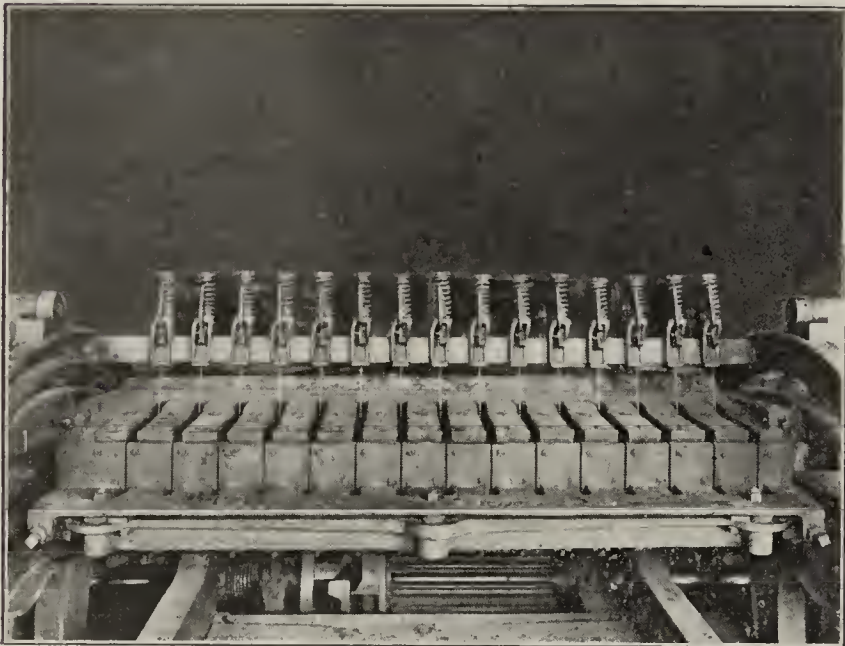
Expert road authorities have declared that the stretch of highway known as the Buffalo-Williamsville road in New York state, surfaced with wire-cut-lug block, is the

O., says: "Referring to the 280,000 wire-cut-lug block on the Kinsman Road, built under supervision of the Ohio State Highway Department, would say that they proved highly satisfactory, both to myself and the Highway Department. Samples of the brick tested for both absorption and abrasion, tested better than any block offered

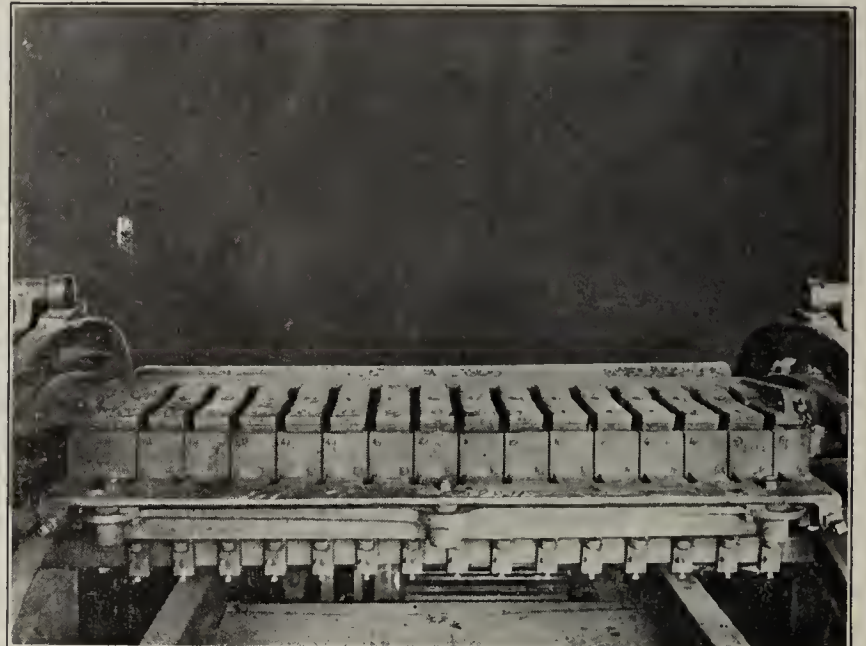
THE DUNN IDEA



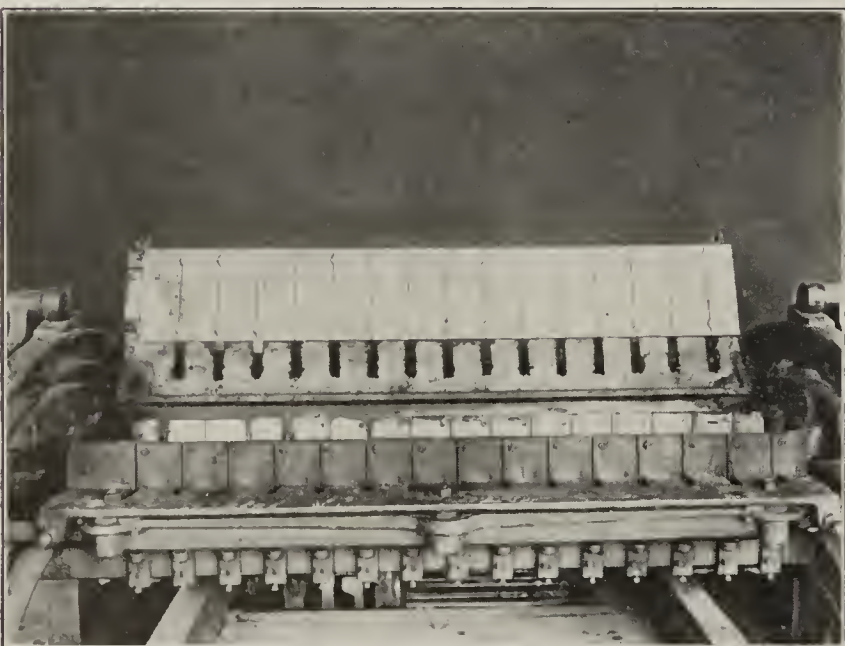
The Dunn Cutter for Forming Wire-Cut-Lug Block.



Complete Cutter Ready for Operation.



Wires and Wire Bar Removed.



Hinged Top Platen Raised to Give Access to Interior.



Side Bar Removed—Showing Bottom Platen.

to the department this year. In the 280,000 block shipped to me, there was only a little over one per cent of culls. These block are easier to lay and easier to fill than the repressed block for the reason that the lug keeps the block a uniform distance apart. I think that roads built of the wire-cut-lug block will out-wear roads built of repressed block."

Busch & Percival, consulting and contracting engineers at Buffalo, N. Y., say: "During the past season we have laid nearly one million of the wire-cut-lug block and we are pleased to say that they have been entirely satisfactory. They cost no more to handle than repressed brick and a far smoother pavement is produced from the fact that the lugs are absolutely uniform and the block take the grouting more rapidly on this account, and the block, having a rough surface where the grouting comes in contact, a stronger bond is formed. We also found that it was both easier and cheaper to grout this style of brick because of its having a square edge and the grouting which was swept in flush with the top of the brick stayed there and made a uniform surface, while with the repressed brick, the tendency has been to sweep the grouting out of the openings between the brick on account

"If we can get wire-cut-lug brick, we will not allow the repressed brick to be used."

These are only a few examples evidencing the general feeling of approval given by city engineers and paving contractors to the wire-cut-lug block made under the Dunn patent.

A Summing Up of the Advantages.

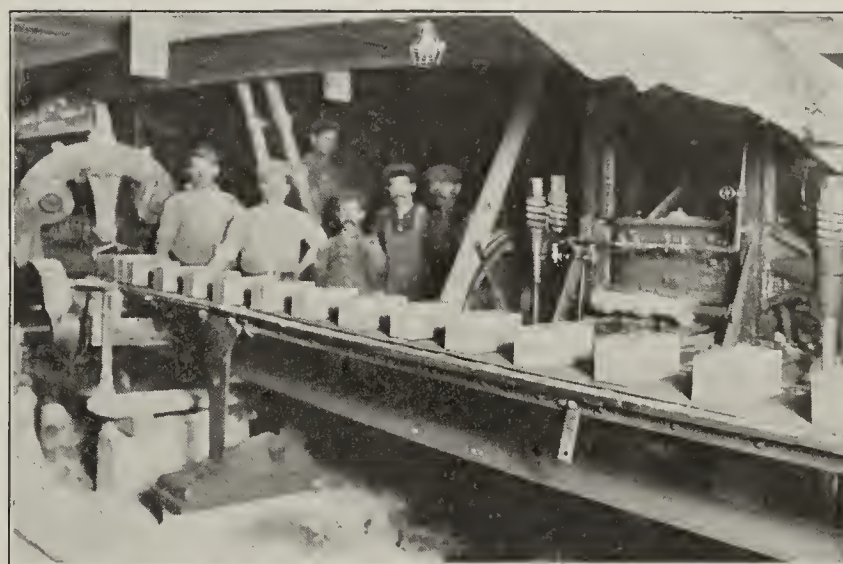
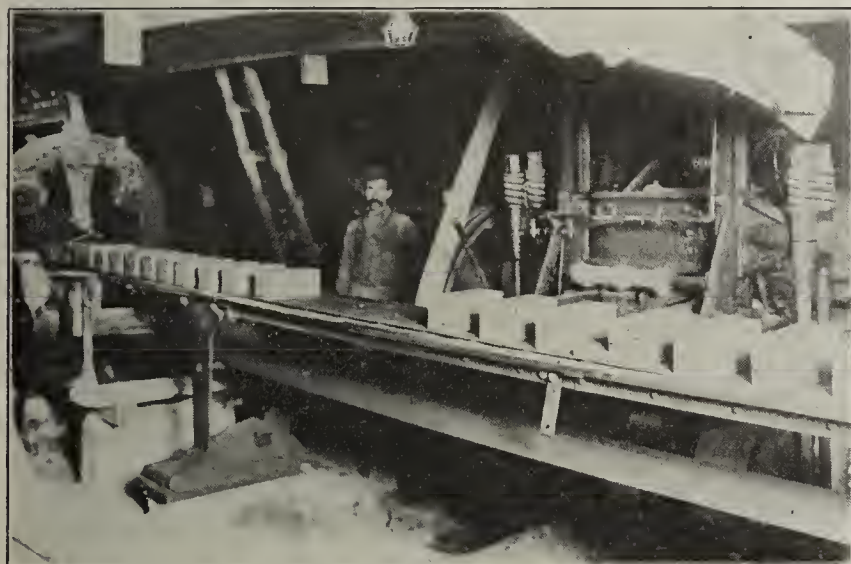
To put the particular merits and advantages of the wire-cut-lug block in direct concrete form, it could be stated that:

First: Such block are not injured in their structure or character by the process of repressing and thereby stand a better abrasion and absorption test than the repressed block.

Second: The uniform lugs permit perfect spacing in the laying of the pavement, keeping the brick an equal distance apart and insuring straight rows with a saving of labor and trouble.

Third: Wire-cut-lug block permit a freer flow of the bonding material and a more certain filling of all the voids between the brick.

Fourth: The special construction and character of the lugs and the rough surface of the wire-cut-lug block in-



A Simple Device in Connection with the Dunn Cutter Distributes the Brick Evenly on Belt. The First Picture Shows the Usual Manner in Which Brick have Heretofore Been Distributed on the Belt, a Long Space Appearing Between Each Group of Brick, Representing One Complete Action of the Cutter.

of their flaring at the top. We have no hesitancy in recommending wire-cut-lug block in place of repressed and hope that that form will be specified on any work which may be awarded us."

E. M. Love & Sons, general contractors at Corry, Pa., say: "We laid wire-cut-lug block on the Roberts' Road and we found them superior to the repressed block in the following main particulars—the absolute uniformity of the lugs makes a perfect alignment and the uniform spacing allows the grouting to flow in easily; the square edges produce, when completed, a very much smoother, better looking pavement than round edged brick; with these block the filler adheres better, making a more perfect bond than is possible with the smooth faced brick. We also found a very low percentage of culls among the wire-cut-lug style of brick. Tests show a decided advantage in abrasion in favor of the wire-cut-lug block. The wire-cut-lug block that we have used have been superior in every particular to any repressed block that we have ever laid."

Robert Bloodsworth, city engineer at Olean, N. Y., says: "We shall insist that work under contract for next season be built of wire-cut-lug block."

J. H. Weatherford, city engineer, Memphis, Tenn., says:

sure a more perfect bond than is possible with the smooth face repressed block.

Fifth: The square edges make a smoother pavement than is possible with round-edged block.

Sixth: The uniformity in the manufacture of the wire-cut-lug block insures a smaller percentage of culls and seconds than is the case in the ordinary run of repressed block.

Seventh: By eliminating the repress in the process of manufacture, the cost of the manufacturing of paving block is largely reduced through the use of the Dunn system.

Eighth: Because of the character of the lugs and the straight edges a larger proportionate yardage is secured per thousand brick than is the case with the repressed brick, this increased yardage being estimated at 5 per cent.

The Cutter Which Makes the Lugs.

Clay workers will be interested in a more detailed description of the cutter on which the Dunn style of wire-cut-lug block are formed. The idea can best be illustrated with pictures and the accompanying page of engravings shows the Dunn cutter complete and dissected, illustrating fully the details of construction.

As will be seen in the pictures, the platen attached to the frame, working automatically, clamps down on the column of clay at the proper moment, holding the clay firmly while the cutting wires pass through the slots in the platen, spaced to the proper width of the block. Along the edges of each section of the platen will be noticed two rounded offsets which cause the wires, in their line of travel across the column of clay, to be deflected, thus forming the rib or lug across the side of the block. This deflection also makes the corresponding groove on the adjoining block.

Illustrations showing the block being carried on the off-bearing belt show another device used in connection with this cutter which has been found very useful. Heretofore the action of a cutter required that the block travel on the off-bearing belt in groups with considerable space between each group, thus causing unnecessarily rapid work by the men in handling the brick part of the time and unnecessary pauses in the work at other times. By

future. The advent of the automobile and its general adoption for transportation purposes throughout the country, has brought about a great change in highway conditions and necessitates the adoption of more permanent forms of street and roadway construction. It is now generally conceded that the brick surfaced roadway is the only one which will successfully and satisfactorily withstand the strain of automobile wear and it has been demonstrated that when the cost of maintenance is considered, brick offers the most economical road surfacing material. The general movement towards the betterment of our highways is certain to bring about the largely increased use of brick paving.

GAS WELL A MENACE.

Gas well drillers unexpectedly discovered oil, while drilling on the property of the Newburg Brick & Clay Co., South Newburg, Cleveland, O. The oil gushed out with such force that for a time the entire plant was



Carload of Dunn Wire-Cut-Lug Brick in the Green State on the Road from Cutter to Dryer. This Shows the Uniformity of the Work Done by the Dunn Cutter and the Perfect Manner in which the Lugs are Formed.

a simple device which could be called a detaining plate, at the lower end of the cutter, Mr. Dunn succeeded in giving the block equal distribution on the off-bearing belt, as is shown in the illustration.

Future of Wire-Cut-Lug Block.

Leading authorities, in the paving brick industry, declare that the development of the Dunn system forms a marked advance in the progress of this branch of the industry and they believe that the better character of the brick paving, which will result from the adoption of the new style of block, will tend to promote the popularity of brick pavement and thereby increase the sale of paving block. They also believe that the adoption of the Dunn system will permit a more satisfactory margin of profit in the manufacture of paving block. In many cases, heretofore, the selling price of block has been so low as to largely eliminate the profits and many manufacturers consider that the Dunn system will be their salvation as a means for placing their plants on a more profitable basis.

It is certain that paving block has a most promising

menaced on account of the close proximity of the stream of oil to the fire in the brick kilns. The stream of oil six inches in diameter, shot from the mouth of the shaft twenty-three feet over the top of the 83-foot derrick.

ONE OF THE WORLD'S LARGEST.

The Ransbottom Bros. Pottery Co., of Roseville, Ohio, informs us that they are building a complete new stoneware plant in connection with their present plant. The plant will be erected at a cost exceeding \$125,000.

The main building is to be 72x204 ft., three stories high; a power house 64x50 ft., four stories high; a steel kiln building 100x204 ft. with eight 30-ft. kilns. There will be two warehouses each 60x300 ft. and another warehouse 160x280 ft. All these buildings will be constructed of brick and concrete with slate roofs, making a most complete and modern plant, which together with the present plant will give the company a capacity of about ten carloads per day, making this one of the largest stoneware plants in the world.

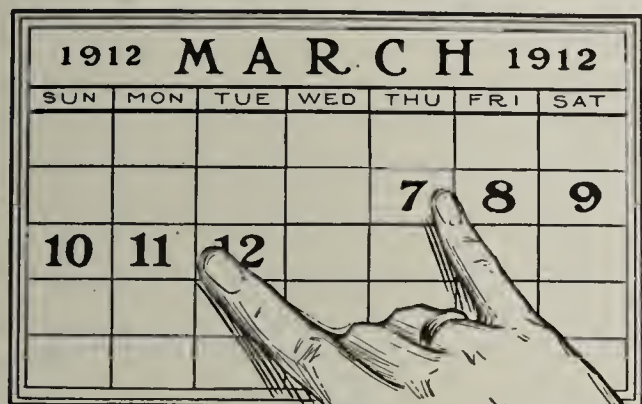
IMPRESSIONS OF A NON-CLAYWORKER

Live Clay Manufacturers Throughout the Country Urged to Avail Themselves of the Splendid Opportunity Afforded Them for the Display of Their Wares at the Coming Clay Show

The following "open letter" to the members of the clay fraternity was written by one who travels extensively, meeting, in the course of the year, almost every clay manufacturer of the Middle West. While not a clay manufacturer, he is intensely interested in the successful outcome of the coming Clay Show and in his travels has not neglected an opportunity to "boost" the show, and from his many talks with "clay men" has extracted some valuable and instructive thoughts on the subject, as follows:

"In Chicago, during the week from March 7 to 12, 1912, will be held the first large clay products show ever conducted in the United States. This will be the first great opportunity of the clay workers in the United States to display what can be and is made of clay, and every manufacturer whether large or small should identify himself with this exposition. While brick have been made from Pharaoh's time down to the present, it is a deplorable fact that up until the past year or so, but few brick makers ever tried to enlighten the public as to the cost of constructing a brick dwelling or in regard

CLAY PRODUCTS SHOW COLISEUM, CHICAGO



**THIS IS YOUR SHOW
HAVE AN EXHIBIT
BE SURE TO ATTEND
GET OTHERS TO GO**

to the advantages of burned clay. In the past, the average person, planning to build a dwelling would figure on frame, or cement construction, and the brickmaker would look with envy on the dwelling, and try to content himself with an order for a few brick to build one or two chimneys.

"The brickmaker did not go to the builder and inform him that he could build his dwelling as cheap of brick as he could of first grade lumber, and possibly only five per cent above the cost of second or third-grade lumber. It behooves every clay worker to come to this exposition and bring some of his ware. If you do not feel inclined to take an entire space, arrange with your neighbors to take a half or a fourth space. This can be done very cheaply. I do not believe there is a clay worker with a capacity so small that he could not afford to pay for a fourth space.

"The writer has interviewed a great many clay workers on this great publicity exposition, and endeavored to show them why they should exhibit their products. In a number of cases I was informed that the brickmaker for instance, only made common brick, and he could not make as fine a showing as the one who made face brick. This

of course is true, in a sense, but the face brickmaker only furnishes from three to ten per cent of a building, while the common brickmaker furnishes ninety to ninety-seven per cent of the building, consequently the common brickmaker has a greater interest at stake than the face brickmaker, and you can readily perceive that it is unfair to put the burden of expense of conducting this exposition entirely on the face brickmaker while the common brickmaker actually receives the greatest benefit. There are four things that every architect, contractor or builder wants to know, when he is figuring a building.

"First: Where can he get the brick?

"Second: When can he get the brick?

"Third: In what quantities can he get them?

"Fourth: At what price?

"Architects, contractors and builders from all parts of the United States will attend the exposition and will want to know these things, so send your ware to the exposition and come in person and show the people who visit the show that Texamazoo is on the map, and that you are a live member of that community.

"Another excuse that was often offered was this, 'If I spend money to advertise brick, my neighbors who have not advertised will be benefited.' While this is true in a measure, it is a wrong way to look at it, because every brick building that is put up in your city or your competitor's city is an advertisement for you, and promotes other sales if you are alive enough to take advantage of them. Every time you cite prospective home builders to these brick buildings and inform them of the cost, you are creating an interest in brick.

"Did it ever occur to you that the average home builder thinks a house built of brick is away beyond his means? You ask him why he does not build of brick and he says he can not afford it. Ask him why he thinks he can not afford it, and almost invariably he will answer that it takes too many brick.'

"Every brickmaker should be in close touch with the architects and contractors in his vicinity, and arrange to have the architects and contractors inform him of every building in contemplation, so that he can go after the builder with facts and figures so forcefully as to convert him to the brick cause.

"It is my understanding that architects and contractors and others who are interested, have signified their determination of attending this great exposition with the expectation that they will receive much benefit and instruction therefrom. It, therefore, is up to you to bring your common brick, face brick, hollow brick, terra cotta, sewer pipe, pottery, flower pots, sanitary ware and every and all kinds of clay ware and help enlighten those who come out to 'see.' The public is willing to be 'shown' about clay products, and it is up to you to do the showing."

AN ENORMOUS KILN.

We have been advised that Mr. H. Haigh has secured the contract for the erection of an immense kiln for the Salmon Brick & Lumber Co., of New Orleans, which will be much larger than the famous Bessemer kiln, when completed. These large continuous kilns are growing in popularity among the brick manufacturers, as it is claimed they effect a considerable saving in fuel.

WISCONSIN ASSOCIATION GETS RESULTS.

While the work of the Wisconsin Clay Manufacturers' Association is mainly educational, in the past year, largely through the efforts of John Ringle, at the head of the committee on railway rates, direct results have been obtained which may be measured in dollars and cents in the favorable settlement of freight rates on brick. The brick manufacturers and brick dealers and all others interested in any way in the use of brick should congratulate themselves on the results achieved by this committee on railway rates. Formerly the rates on brick in general effect in Wisconsin were considerably higher than in the adjoining states. As a result of the work of this committee, a favorable settlement has been effected whereby the freight rates in Wisconsin are approximately the same as in adjoining states and the same as the inter-state rates; as a result, a square deal is now open to the Wisconsin brick industry. The last rehearing of the case was held August 3rd, and a final decision rendered on August 15th. The association has had these decisions printed in pamphlet form for distribution among the clay manufacturers. The new rates decided upon are as follows:

Distances.	Cts. Per 100 lbs.
5 miles or under.....	1.70
10 miles and over 5 miles.....	1.85
15 " " " 10 "	2.00
20 " " " 15 "	2.15
25 " " " 20 "	2.30
30 " " " 25 "	2.45
35 " " " 30 "	2.60
40 " " " 35 "	2.75
45 " " " 40 "	2.90
50 " " " 45 "	3.05
55 " " " 50 "	3.15
60 " " " 55 "	3.30
65 " " " 60 "	3.45
70 " " " 65 "	3.60
75 " " " 70 "	3.70
80 " " " 75 "	3.80
85 " " " 80 "	3.90
90 " " " 85 "	4.00
95 " " " 90 "	4.10
100 " " " 95 "	4.20

Minimum weight, 50,000 lbs., except that in cars of less than 50,000 lbs. capacity the marked capacity shall be the minimum weight.

Another clause states: "It is further ordered, That the respondents named above make effective between their various lines, for distances up to and including 100 miles, joint rates one cent per 100 lbs. higher than the rates named in the above table."

Other radical changes were made in rates for distances between 100 and 300 miles.

BRITISH PLANNING NATIONAL ASSOCIATION.

It seems a remarkable fact, in this age of organization that the British clayworkers have not as yet organized a National Brick Manufacturers' Association. This question of organization, however, is at present being discussed with interest by all British clayworkers and plans are being made for forming a National Association. In the last issue of the "British Clayworker," letters from prominent members of the British clay working industry appeared urging the formation of an association similar to that in our own country. The "British Clayworker," in an editorial, has the following to say on the subject:

"There is apparently a general consensus of opinion that labor troubles are to be anticipated in the near future, and a feeling, which we fear is only too well grounded, that the employee is inclined to look upon any one concession merely as the predecessor of another. Of course, political economy sets an automatic limit to the wages that an employer can pay, but the average employee knows nothing of political economy, and troubles himself little about the commercial future of a works as compared with any temporary personal advantage that he

thinks he can wring from it. In matters affecting price and output, our correspondents are, we are glad to note, in agreement with our own view that these can only be effectively dealt with by strong local associations, the National Association which they would elect being charged with duties of general interest to the trade, and having its nucleus and motive spirit in the Institute of Clayworkers."

The following strong appeal from Mr. G. Andrews, president of the British Institute of Clayworkers, contains some good food for thought on the value of organization. He says in part as follows:

"It should certainly be possible for master clayworkers to establish an equally powerful federation of district associations, and by the creation therefrom of what may be termed a national clayworkers' council, to possess the machinery for welding together every common interest, and also for the concentration of a powerful and pacific influence upon any area disturbed by labor unrest.

"The true interests of capital are identical with those of labor, and the failure to demonstrate this, whether the fault of the men or the masters, or of circumstances which have controlled both, has been the cause of that estrangement of relationship the fruits of which are strikes and lock-outs.

"The duty of restoring confidence lies first of all with the employers, and a strong national federation of clayworkers is, in my opinion, a necessity if this is to be done. Surely, if the goods we produce are required, the purchasers should pay such prices as will afford reasonable wages to the workmen and a fair profit upon the capital employed. It is of vital moment to the clayworking industry that it should attract the good workman, and not, as is perhaps becoming the case in some directions, that it should be considered as suitable employment for the casual and the incapable worker.

"How useful such a federation would be at the present time in respect to the National Insurance Bill! It appears to be far from acceptable to the Labor Party, and certain it is that some of its provisions will, if passed into law, deal a heavy and unfair blow at the British clayworker."

DEATH OF PROMINENT BRICK MANUFACTURER

Brick manufacturers throughout the United States, and especially those who are identified with the Building Brick Association will learn with regret of the death of one of their staunch supporters, Carl Cappel, of Pittsburgh, Pa., the largest individual stockholder in the Central Brick Co., and a power for good within the building brick trade. Mr. Cappel died November 10th in the St. Joseph's Hospital, at Pittsburgh, where he underwent an operation for appendicitis. Immediately after the operation it was believed that the patient would recover, but his condition suddenly took a turn for the worse, and his death occurred soon after.

Mr. Cappel was in the prime of life, being only 45 years of age. He was the largest individual stockholder in the Central Brick Co., of Pittsburgh, and was also president of the Columbia Improvement Co., a local real estate firm. He is survived by his widow, Mrs. Rosanna Cappel, and seven children.

Mr. Cappel was elected a delegate to the last Republican party national convention and last year he was an unsuccessful candidate for the Republican nomination for Congress against A. J. Barchfeld. In the death of Mr. Cappel, the various brick associations have lost an ardent worker.

NEEDS BOOSTING.

There are few articles or materials which have so many points of superiority as burned clay products and yet there are few things more poorly advertised and consequently so poorly appreciated by the people.—Mantel, Tile and Grate Monthly.

DANGER IN EXPLOSIVES

Dynalite—The New Explosive, Equals Dynamite in Shattering Power With the Element of Danger in Handling Largely Eliminated

The use of explosives is a necessity in clayworking operations. A large proportion of the manufacturers of clay products find their raw material in the form of shale, which requires blasting as in other mining or quarrying work. Even when the raw material is a soft clay it is frequently the custom to shatter down the clay banks with explosives to permit handling of the material with greater ease. The use of dynamite or other explosives in the clayworking industry is therefore quite general, and the handling of these explosives is one of the responsibilities which confront most clayworks' managers and superintendents.

thought of possible fatalities at his works, and would be deeply grieved to have a fatal accident occur. The matter however, from a purely financial point of view is worthy of careful consideration.

Any fatality resulting from the handling of explosives might easily result in an expensive negligence suit, and in most cases heavy damages can be recovered. In recent years, the average cost of human life to employers has increased, and statistics show that the average amount recovered now from employers for loss of human life is \$1,000. It is an open question whether an employer would not be considered liable for loss of life



A Portion of the Little Village of Dynalite. In This Place are Enough High Explosives to Hurl a Whole City Into the Air, But Because the Explosive Is Dynalite, the Workers Feel as Safe as If in Their Own Homes.

While the use of explosives is so general, yet very few clayworkers have given any serious attention to the matter, and few seem to realize the constant menace of accidents resulting from this source. Little attention has been given to the subject and the general feeling has been that "dynamite is dynamite," and that the risks taken are necessarily involved in its use. While there has been an understanding, of course, as to the danger of loss of human life from premature discharges, delayed discharges, or the careless handling of dynamite, yet perhaps the full menace of this danger is not fully understood.

There is, of course, the humane consideration, and every owner of a clayworking plant must dread the

resulting from the handling of an explosive if it could be shown that some other explosive, less dangerous, could have been used for the work involved.

The number of accidents due to explosions in clay and shale pits is, of course, not known and can only be estimated. It is certain, however, that a large number of such accidents occur each year and that many of them are fatal.

Clay-products manufacturers, with these points in view, will be glad to learn of an explosive which is the equal or superior of dynamite in shattering power, but which eliminates most of the danger involved in the handling of dynamite. This explosive is called "Dynalite" and is manufactured by the American Dynalite Co., Elyria, O.,

whose works are located at Amherst, O., and who have magazines at Ottawa, Ill.; Wilmington and Findlay, O. The writer recently enjoyed a visit to the dynalite works at Amherst, and this article is written for the purpose of describing briefly the manufacture of the explosive and explaining its special merits and special value for use in clay and shale pits.

Dynalite is a hydro-carbon explosive, and in its manu-



The Building in which Dynalite is Mixed.

facture no nitro-glycerin (that most dangerous of all explosive materials—and fundamental in the making of dynamite) is used. The most important constituent of dynalite is potassium chlorate. It is needless to go into the chemical formula of materials used, and no technical description of the process of manufacture would be of particular interest.

The safety of Dynalite was demonstrated at the works of the Dynalite Company in a fire about a year ago, which destroyed many of their buildings. Large quantities of dynalite were burned, but no explosion took place. This certainly would not have been the case if the material manufactured had been dynamite.

The works of the American Dynalite Co. are located in a hilly, wooded section, and constitute a group of isolated buildings—no large buildings being used. These buildings, scattered around a beautiful grove, have the appearance of a mining camp or rural settlement, and constitute a little village.

The main building is the mixing house, where the various ingredients are gathered in a bin and after being well mixed and screened form a material similar in consistency to brown sugar and of a reddish brown color. This material undergoes other forms of treatment to produce the various grades of dynalite, and finally finds its way to the cartridge-loading house, where it is put into paraffine lined paper tubes and properly sealed in the form of cartridges, a pound cartridge being about eight inches in length. One would suppose that the handling of a high explosive of this kind would be rather a delicate affair; and yet the safety of the material is shown by the nonchalant manner in which the workers load these cartridges, the wax paper being sealed tightly on the end by a blow on the table, and the finished cartridge being tossed carelessly into an adjoining bin.

Dynalite was used in the largest crushed stone quarry in the country this season as the best explosive to blast 80,000 tons of rock, at one operation. This quarry is located at Sandusky, Ohio, and belongs to the Wagner Stone Co., of Sandusky, one of the largest producers of crushed stone in the United States.

Dynalite is also used at the quarry of the Illinois State Penitentiary, at Joliet, Ill., where it was adopted, in preference to dynamite, after a comparative test covering eight months.

The buildings of the company are well arranged, and maintained in an excellent manner, and the entire equipment is up-to-date and complete. Gas engine power is used for the driving of the various machines, and the buildings and grounds are lighted by natural gas.

Mr. F. H. Briggs, general manager of the works, and the inventor of dynalite, is a very interesting character. His military bearing evidences his long military service with the famous Troop F. The manner in which he has developed the dynalite proposition and brought the American Dynalite Co. to its present status, proves his ability and energy. In accomplishing his present success he and his company have necessarily had to contend against what is known as the "Powder Trust," for it must be known that dynalite is the successful competitor against the products of this so-called "trust."

The location of the works of the American Dynalite Co. is one of the most interesting and romantic spots in Ohio, the surrounding scenery being of special beauty, and the rock formations of a remarkable character. All the machinery used on the grounds for making dynalite was invented by, and installed under the supervision of, Mr. Briggs. The buildings and the grounds are protected from fire by a system of water pipes and fire hose running to each building, a pumping engine providing water force at high pressure. A gas well on the grounds furnishes ample gas for operating the engines and for heating the buildings.

As stated before, Dynalite is no experimental proposition. It has a splendid record of five years during



Mr. Briggs, the Manager of the Works is Seated Adjoining a Pile of Cases Filled with Dynalite Ready for Shipment to all Parts of the Country. There are 10,000 lbs. of this Wonderful Explosive Piled up Here in This Little Building—Enough to Breach a Tunnel Through the Rocky Mountains.

which time not a life has been lost as a result of handling his explosive; and records of fires and other accidents, which would have resulted in fatalities if dynamite had been the explosive used instead of dynalite, make it possible to trace a saving of at least 100 lives during that period through the use of dynalite.

One great advantage in the use of this explosive is the non-injurious character of the fumes of the exploded

material. As is well known, the gases of exploded dynamite are most injurious to the health, and have a very bad effect upon the workmen where the explosive is used in mines or deep quarries. No nitro-glycerin, gun-cotton or fulminate is used in the manufacture of dymalite. It is the world's only successful substitute for dynamite.

The Power of Dymalite.

Notwithstanding the safety of this wonderful explosive, it shows a shattering power fully equal, if not superior, to the best dynamite on the market. Its main advantage is its dependability. In the case of dynamite one can never tell whether the explosive is in suitable condition for use. If it is wet or even damp it requires drying, with much danger attending that process. If the weather is cold it requires thawing, and this is always a most dangerous operation. In the case of dymalite, however, the

pockets loaded with dymalite cartridges, fuses and exploders; and Mr. Allyn carried an electric battery, and Mr. Briggs a shotgun. Reaching a convenient spot, Mr. Briggs suddenly hauled out a dymalite cartridge and throwing it into the air over his head, brought his shotgun quickly to his shoulder and pegged the pound of explosive full of shot before it reached the ground. The writer held up his hands to ward off the impending disaster, but lo and behold—nothing happened. Mr. Briggs did not even wince, but calmly continued smoking his cigar.

The next "stunt" was to place a cartridge at the foot of a tree, fire into it with a shotgun at close range, partly tearing it to pieces. The shattered cartridge was then set on fire and it blazed up in a spiteful way, and while in this condition another charge of shot was put into it. No reasonable explosive would stand this kind of treatment, but the dymalite proved as harmless as so much



The Inventor Throwing a Burning Stick of Dymalite Forcibly Against a Tree. Either the Impact or the Fire Would Cause Certain Death, in This Case, if the Explosive were Other Than Dymalite.

material does not deteriorate in storage, and dampness will not affect it and it never requires thawing even in the coldest weather.

The wonderful power of dymalite has been demonstrated by thousands of users throughout the country.

Mr. C. C. Hagen, the manager of the Douglas-Whisler Co., of Beaver Falls, Pa., says: "We have used one and one-half tons of dymalite furnished us by the American Dymalite Co. We use it because it is safe, does not require as much to do the same work as dynamite and does not freeze."

The Man From Missouri.

It is all well enough to talk about the safety of an explosive, but when one sees the terrific effect that can be produced by a little 3-inch stick of dymalite, one is apt to be skeptical regarding its entire safety, and any careless handling of same in the near vicinity is apt to cause a slight hair-raising and an empty feeling in the region of the stomach.

It was therefore with some feeling of hesitancy that the writer followed Mr. Briggs, the manager, and Mr. Allyn, his assistant manager, from the works out into an adjoining grove where they proceeded to show just how safe and wonderful dymalite really is. They had their

sugar and burned up quickly without anything serious happening. Even a steel-nosed bullet from a revolver, fired at close range, proved harmless in its effect, although the impact upon the dymalite must have been tremendous.

Mr. Briggs seemed determined to get a cartridge of dymalite to explode, and not being able to do anything with the guns, proceeded to hammer it with a hammer; but again failed in his attempt to commit suicide, and finally gave it up in despair. To show, however, that the stuff really would explode under certain conditions, he opened a cartridge and immersing it in a pool of water, allowed it to get as wet as it would. An exploder was then attached to a fuse, inserted, and the cartridge placed under a pile of earth. The fuse was lighted—then everybody did run, even Mr. Briggs and Mr. Allyn, and they did not stop running until they got some considerable distance away. This time there was no doubt about dymalite being an explosive. The smoke of the burning fuse could be seen getting nearer and nearer the cartridge, and then—bang!!—up went a cloud of smoke and earth, and rocks could be heard rattling around in every direction. A visit to the scene showed a nice big hole in the ground where once there had been a mound, and one could easily imagine what would have happened

if the cartridge had been imbedded a little deeper in the earth.

Mr. Briggs having demonstrated the safety of dynalite, had a few remarks to make regarding the foolish ideas some people have regarding explosives. He says that



This Girl Holds Enough Explosive in Her Hands to Blow Up a Sky Scraper—She is Loading a Dynalite Cartridge.

the natural inclination is to always blame the explosive if the charge does not go off as expected. Any number of reasons could be found for a failure to explode a charge of dynamite or Dynalite, and few take the pains to investigate the source of trouble, preferring to blame the explosive rather than themselves. Mr. Briggs says that many endeavor to fire their holes with batteries that are too weak, or that have been short-circuited, or where the wires leading to the charges are so long that the battery is not sufficiently strong to fire the exploders. He said that another source of trouble is in having improper fuses or exploders, or in using exploders which have deteriorated or been injured. Many users of explosives do not even take the trouble to try to learn how to handle the material with which they are provided.

An Explosive for Clayworkers.

Dynalite is especially suitable for use in clayworking operations. In most cases, managers or superintendents of clayworking plants cannot employ expert handlers of explosives, and are compelled to trust this branch of the work to men not particularly familiar with it, and not infrequently to unintelligent laborers. There is no such thing as a "foolproof" high explosive, but it is a great advantage to the clay-products manufacturer to have an explosive at his command which eliminates so much of the danger as does Dynamite; and the clay-products manufacturers should be glad to avail themselves of its use.

The "Water Grade Dynalite" is specially useful for shale and clay pit operations. It can be broken up and used in the water or in wet places, either in summer or in winter, with full effect. Its strength of detonation is not weakened in any degree by the cold. Mr. Briggs says that the general tendency is to over-use explosives. It is undoubtedly better to use as small an amount of explosive as is possible to accomplish the desired results.

One advantage in using dynalite is in the careful and special service given to the users by the American Dyna-

lite Co. Full directions are given, and the company even sends a representative if needed, to give instructions in the handling of the explosive. The experience of many years is placed at the disposal of the brick and tile manufacturers. It is safe to say that any one who takes the trouble to look into this matter will become a user of Dynalite in preference to dynamite, and after a comparison of the two explosives will be as enthusiastic as was the Douglas-Whistler Co., Beaver Falls, Pa., who say, "We use it because it is safe, and not so large a quantity of Dynalite is required to secure the same results as when dynamite is used."

A HUSKY LOAD.

We doubt whether many brick wheelers could trundle as big a wheelbarrow load of green brick from the yard to the kiln, as is shown in the accompanying illustration. This shows a load of brick wheeled on a Wellington steel-slat barrow at the plant of Carson Bros., Vancouver, Wash.

The regular load for this barrow is 150 green brick



Showing the Heavy Load the Wellington Barrow is Capable of Sustaining.

of standard size but this particular load contains 329 green brick. The load was actually wheeled, from the yard to the kiln, by the man standing on the barrow. It will be noted that the arbor was filled with brick and brick are also piled between the hakes on the barrow.



A Wellington Steel-Slat Barrow.

Carson Bros., in writing the Wellington Co. about this remarkable load, say that their Wellington steel-slat barrows have been used for two years and are as solid and strong as ever.

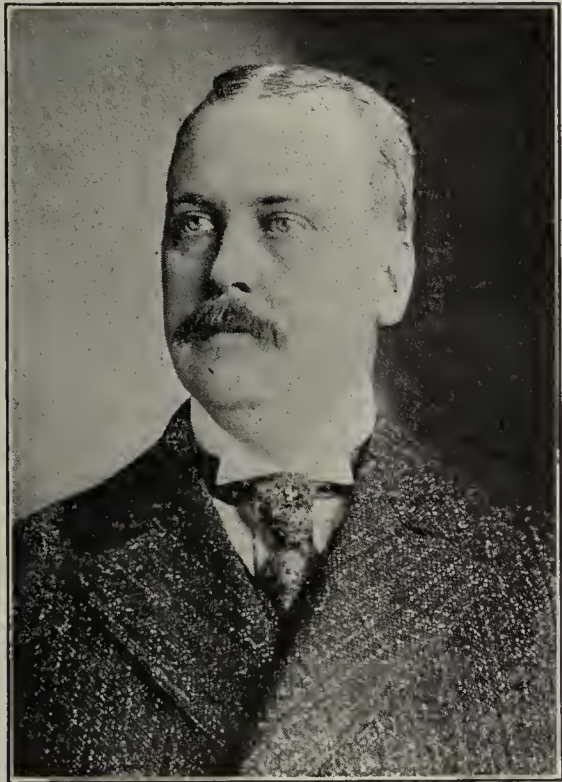
Accompanying this is a picture of the same kind of barrow as was used for this record load.

SOUTHERN PLANT'S FORMAL OPENING

New Plant of the Sibley-Menge Brick & Coal Co., Opened by a Day of Festivities at Sibleyville, Ala.

Illustrating both the interest and the development of the diversified industrial movement of the Birmingham district and marking an epoch in the history of the pioneer shale brick manufacturer of the South the "unique formal opening" of the new plant of the Sibley-Menge Brick & Coal Co., was one of the most interesting, and important features of the year in the building trade circles of Alabama.

The "opening," marking the completion of improvements which give the Sibley-Menge Co. an increased capacity of 1,000,000 common brick and 250,000 face brick per month, was appropriately celebrated, and is of especial interest when it is remembered that the plant of the Sibley-Menge Brick & Coal Co. is thirty-three miles from Birmingham, on a spur of the L. & N. leading from Warrior, Ala., three miles into the interior—about two miles from Coaldale, where John W. Sibley, president of the company, began the operation of the first shale brick plant in the entire South a number of years ago.



J. W. Sibley, President of the Sibley-Menge Brick & Coal Co.

At one o'clock on the afternoon of November seventh, a special train, known as the Sibleyville special, pulled out of the L. & N. depot in Birmingham, the three coaches of the train being crowded by over one hundred of the leading citizens of the Birmingham district.

While en route to Sibleyville, which is the name bestowed upon the prosperous settlement which has been built-up around the plant of the company, a substantial luncheon was served to the party, a buffet car, with an adept corps of waiters, being attached to the train. The menu for the luncheon was such as to create favorable comment, fruit punches and other carbonated drinks, with cigars, being included in the last course.

The party which accompanied Mr. Sibley on the excursion included some of the most noted men and developers of the entire South, nearly all of whom, while residents of this district, are men either of inter-state or national prominence.

Upon arrival at the plant the party, headed by J. W. Sibley, president of the company, were greeted by W. L.

Sibley, general manager of the plant, at the head of the large body of employees, operations having been suspended to mark the arrival of the party.

An inspection of the entire plant followed, the face-brick kilns, the factory, or crushing and pressing departments, the new Haigh continuous kiln, 525 feet in length, the shale beds in the brow of a mountain, a stone's throw from the factory, each being visited in turn.

Each visitor in the party, which had been augmented by other arrivals from the surrounding country, was given attractive samples of the finest output of the company in the shape of miniature brick.

Prior to the party scattering to make individual inspection of such features as interested them a panorama photograph, showing the coal mines and clay pits in the background, the excursion train, the crowd of visitors, the original plant, the additional plant and the shale beds, as well as the palatial bungalow which domiciles the household goods of Mr. W. L. Sibley, on the cap of another beautiful hill overlooking the entire plant, was made by one of Birmingham's scenic artists, the panorama prints to be distributed as soon as developed as additional souvenirs of the occasion.

Informal "booster" talks by Mr. J. B. Babb, secretary of the Birmingham Chamber of Commerce, Mr. Robt. Jemison, Sr., the head of the numerous Jemison enterprises of Birmingham, A. H. Ford, president of the Birmingham Railway, Light & Power Co., F. P. Chaffee, secretary of the Business Men's League, to which a witty and appropriate reply was made by John Sibley, marked the departure of the party on its return to Birmingham.

It is interesting to note in connection with the formal opening of this new plant, that John W. Sibley was the pioneer in the manufacture of brick from shale in the South.

Fifteen years ago all brick in the South were made only from soil and disintegrated clays found in valleys, Mr. Sibley, himself, operating the first plant at Coaldale, Ala., on clays found in the creek bottom at that point. When this plant was destroyed by fire, it was rebuilt with equipment for the manufacture of building and paving brick from the shales above the Black Creek coal measures, which abound in such great quantities in that section and the product of the new plant soon set the standard of excellence in both building and paving brick throughout the South and the Birmingham district today is recognized as the centre of the shale brick industry in the South.

Mr. Sibley was also instrumental in locating the Southern Sewer Pipe Co.'s plant at North Birmingham, which uses large quantities of the same stratum of shale in manufacturing sewer pipe.

In 1906, the Sibleys disposed of their interest in the Coaldale plant and in conjunction with J. A. Menge, who had just sold his controlling interest in the Southern Sewer Pipe Co., at North Birmingham, organized the Sibley-Menge Co., for the manufacture of face brick with a capacity of 25,000 brick per day, which was increased to 50,000 daily capacity after the first year's operation.

Until recently architects and builders were compelled to go North to get high grade face brick in various colors, as there was no factory in the South for the making

of such goods. The Sibley-Menge Brick & Coal Co. was organized to fill this long-felt want. Their aim has been constantly to produce the highest grade of face brick, not counting the cost, but at the same time selling their product at the lowest prices consistent with safety and reason. They have been serving the building public of the South for more than five years, and as a result the price of press brick has been reduced to the purchaser several dollars per thousand, saving in aggregate to the property owner many thousands of dollars.

How well their efforts have been appreciated is shown by the large number of buildings of every character throughout the South, that have been faced with their brick.

The local demand for common brick made from shale had increased at such a pace that the company decided to erect a companion plant for that purpose, which has just been completed and will put on the market over a million brick per month in addition to the face brick from the other plant. It will be interesting to our readers to have a description of the elaborate and modern method of manufacturing brick from shale at the plant.

The visitor is first taken to the great shale pit where a gigantic steam shovel is at work cutting and ripping up the shale, which, to the uninitiated, looks like so much rock and wholly unsuited for brick making. The shale is carried to the factory over a gravity tram road and dumped into the huge dry pan, where it is crushed and ground to powder, thence it is taken by a cup elevator to the top of the factory and passed over a screen, where only the fine particles sift through, the tailings going back to the crusher to be reground. In this way the structure of the brick is homogeneous.

This finely ground clay then falls by gravity to the hoppers over the brick machine or press and thence into the molds, where a pressure of forty tons to each brick is exerted and the perfect brick is delivered on the off bearing table ready to be set in the kiln for burning.

This is what is known as the dry press process, no water being mixed with the clay except enough to settle the dust. By this system there is eliminated the expensive dryers and cost of handling in and out of same, as is the case with the mud brick plants.

From the machine the brick are conveyed on spring trucks to the continuous kiln, where they are set and the process of burning begins as each chamber is emptied daily, not having to wait until the entire kiln is filled.

The heat is carried forward continuously in the kiln and practically consumes all the gases in the smoke that pass out of the stock and are wasted in the old type of kilns.

After the brick are burned and sufficiently cooled the chambers are unloaded one at a time and are then ready for refilling. In every department the equipment is arranged with a view to economy and careful handling of brick, a system of gravity carriers has been installed for loading the brick direct from the kiln to the cars. The company operates its own coal mines, thus assuring a regular supply of fuel both for its large power plant and kilns.

The general management of operations at Sibleyville is in the hands of Mr. W. L. Sibley, whose eighteen years of practical experience in manufacturing brick insures the highest degree of efficiency and quality of product.

The plant has a splendid system of fire protection and operates its own electric light and water works. The climate is salubrious and the artesian well of sparkling

lithia water makes Sibleyville a most desirable place for the large number of employes to make their homes.

Mr. John W. Sibley, president of the company, has been treasurer for the past twenty years of the National Brick Manufacturers' Association and was also appointed, by President Roosevelt, a member of the National Advisory Board on the Testing of Fuels and Structural Materials, an honor well-merited. He is also president of the Building Material Men's Exchange, of Birmingham, and an active member of the Birmingham Chamber of Commerce, of which he was one of the charter members. In addition, Mr. Sibley is identified with every movement for the civic betterment or the municipal improvement of Birmingham and is recognized as being one of the strong men of Northern Alabama.

Mr. J. A. Menge, vice-president of the company, is a native of Louisiana and has always taken an active interest in the Sibley-Menge Brick & Coal Co., though spending most of his time either in the East or in New Orleans, being equally well-known to the building trades of those sections as well as the middle South.

ACTIVE VIRGINIA PLANT.

A visit to the plant of the Potomac River Clay Works at Alexandria, Va., shows that enterprise to be in active and successful operation. Mr. Clyde C. Lamond, the owner, informs us they have had a very good business year but that their prices have not been what they should have been. Mr. Lamond thinks that something should be done to raise vitrified sewer pipe prices to a basis where a fair profit can be made. These clay works are also manufacturers of electric conduit, flue lining, drain tile and other clay products.

SOUTHERN BRICK MANUFACTURER DIES.

Maj. Wm. G. Bush, a Confederate veteran and for many years one of the leading brick manufacturers and contractors in the South, died at the age of 83 years at his home in Nashville, Tenn. Starting as an apprentice brick layer, he later went into the brick business for himself and built up the company of W. G. Bush & Co. which is well known throughout the entire south.

SOLD AT PUBLIC AUCTION.

E. A. Crewson, receiver for the Ouachita Coal & Clay Product Co., at Versailles, Mo., informs us that the company's property, consisting of 1,720 acres of land located near the city, was sold at public auction, on Oct. 10th, for the sum of \$88,000. The property including the brick plant was bid in by A. B. Kalpmeyer for the purchasers, J. M. Goodbar, J. Applewhite and Walter B. McLean, all of Memphis, Tenn. The clay is of the very best quality and it is reported the plant will soon be put in active operation.

TILE WORKERS SCARCE.

Reports from the Southern Mosaic Tile Co. of Birmingham, Ala., is to the effect that the demand for expert tile workers in that locality far exceeds the supply.

There are said to be many large buildings in Alabama and adjoining states now under construction and others in contemplation where this class of workmen are required. Tile workers in that district are comparatively scarce, although the wages range from \$5.00 to \$7.00 a day steady throughout the year. The workmen, however, must be skilled and it is said the restrictions of the tile workers' union is responsible for the dearth of these expert workmen, as only one man can be graduated or finished in one shop each year.

THE WELLINGTON SHOPS

A Widely Known Ohio Clay Machinery Firm and Its Well Equipped Plant for the Manufacture of Clayworking Equipment.

Thirty-two years of successful operation—thirty-two years in promoting the progress of the clay industry—thirty-two years in the construction of high class brick machinery—that is the record of the Wellington Machine Co., of Wellington, Ohio.

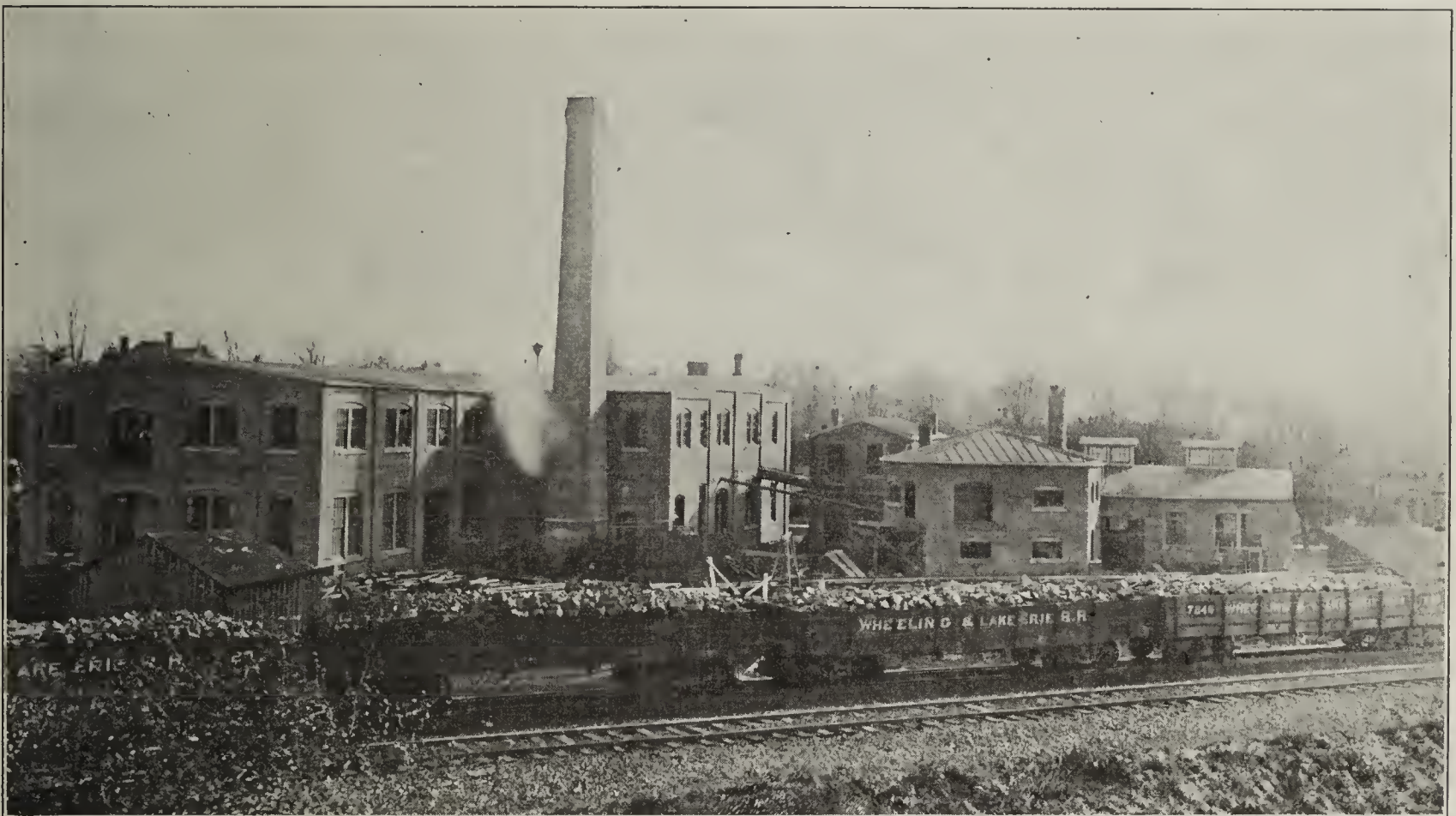
Through the length and breadth of this country the “Quaker,” “Monarch” and “Duke of Wellington” soft-mud brick machines are known for their excellence and time-tested merit. An illustration, in this article, shows the little building where the “Quaker” machine first had its birth. Today, on the same site stands a substantial and well constructed group of brick buildings, housing a machinery plant which in every respect is modern and complete, and the products of the Wellington Machine

all the various lines of clay machinery which they produce.

All the factory buildings of the Wellington Machine Co. are constructed of brick, the Bennetts being enthusiastic believers in the superior merits of clay products. The main building is two stories high, one section being 120 ft. in length by 40 ft. in width with a wing 40 by 50 ft. in dimensions.

At one side of this main building is a large brick storage house 100 ft. in length, erected to store stock of all kinds and machinery parts. In this storage house is kept constantly on hand a complete stock of wheel barrows, molds and other Wellington equipment, for which there is a demand.

On the other side of the main building is the foundry,



The Plant That Made Wellington, Ohio, Famous.

Co. now find a market throughout this country and Canada and even abroad.

The history of the Wellington Machine Co. is one of continual progress. In the preface of their catalog, they state that “events in all phases of life have demonstrated the impossibility of remaining fixed—there must be progression or there will be retrogression.” This is a true saying and the Wellington Machine Co. have shown that they do not believe in standing still and consequently have continually been in the line of progress.

The present Wellington Machine Co. was organized in 1891, taking over the old business and reorganizing along modern lines, corresponding with the handsome new buildings which were erected about that time. At the present time, Mr. F. W. Bennett is president of the company; Mr. H. S. Bennett, secretary and treasurer; and Mr. R. C. Bennett superintendent of the works. The Bennett organization is a strong one and they have a high standing in the business world. They conduct their affairs along conservative lines and always stand back of

a most completely equipped establishment and fitted to turn out a large quantity of high grade castings. The cupola has a capacity of ten tons and in this foundry castings can be handled of over a ton weight. An overhead crane in the foundry permits the easy and economical handling of the large flasks and heavy castings.

Adjacent to the other buildings is the pattern storage house, isolated as a measure of fire protection and containing all the valuable machinery patterns which have accumulated during the past thirty-two years.

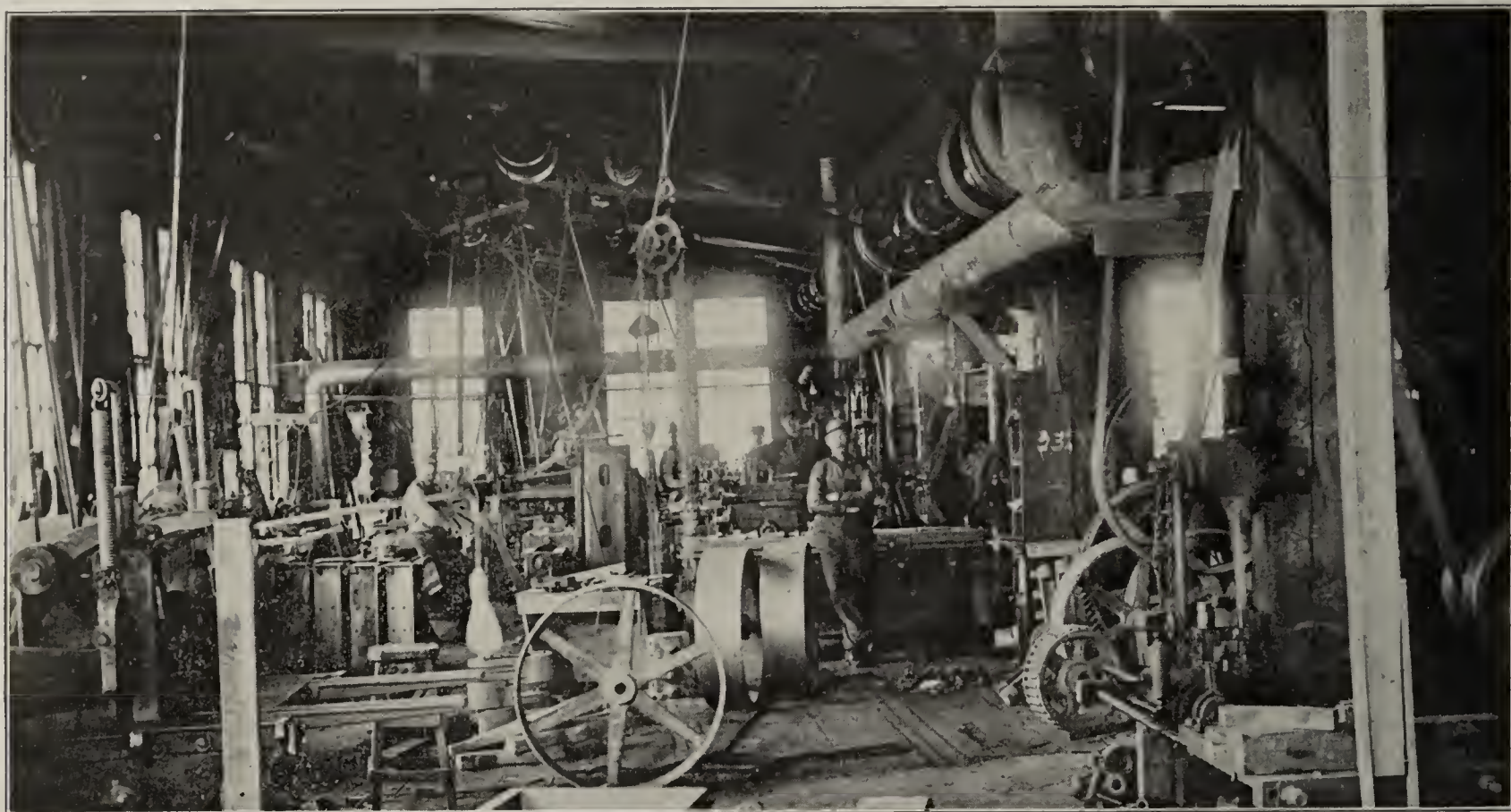
In a corner of the main building are the offices of the company, well arranged and convenient and these offices are easy of access from the main machine shop and erecting room.

As will be noted in the illustration, the main machine shop is a busy appearing place, well equipped with all the various machine tools and special machinery required for the production of clay working machinery and equipment. It is a modern shop in every respect and exemplifies the careful attention given by the company to all

details of their work. At the present time a surprisingly large force of men, for this season of the year, is employed and it is evident that, even in the winter season, these shops are kept busy by the demands upon them.

Attached to the main machine shop is a power house which is provided with a very complete and high-class

the clay industry. Much of the machinery equipment was especially designed by the Wellington people for their own use and some of these special machines are of great interest and play an important part in the economical manufacture of brickmaking equipment. For example, a wood engraving or die cutting machine was especially



Machine Shop—A Corner of the Main Floor of the Wellington Machine Works.

equipment. A 125-h. p. boiler and a 100-h. p. Atlas engine supply all the power needed for the entire works. With this power plant is also operated a dynamo for providing the works with electric lighting, this being an-

built for cutting the brand lettering for the brick molds, each customer requiring a separate brand. Another machine is the riveter, with which the rivets strengthening the molds are permanently and strongly headed. In brick



Wood Working Up-to-date—A Section of the Wellington Works Where Brick Molds and Barrows are Made.

other evidence of the progressive spirit of the manufacturers.

Perhaps the most interesting feature of the entire works is the wood-working shops, which occupy the entire second floor of the main building. It is safe to say that this is the most complete woodworking establishment in

mold manufacture this work is usually done by hand and is frequently unsatisfactory. Another complicated device is the special machine for cutting the handles of the molds.

The wood-working department contains a dryer and the Wellington Machine Co. gives especial attention not

only to the selection of the lumber used for the making of its molds and barrows but in the drying and preparation of this lumber for use. There is such a thing as "overdrying" lumber and injuring its value thereby, and

One of the most important machines made by the Wellington Machine Co. is the mold sanding machine but they also manufacture a full line of other equipment required on soft-mud and stiff-mud plants, including pug



The Original Home of Wellington Machinery.



A Two-Carload Shipment of Wellington Machinery—Wellington Plant in the Back Ground.

much knowledge and skill is necessary to have the material in the right condition to produce the best results.

The Wellington Machine Co. has made its reputation in the clay industry by the manufacture of soft-mud brick machinery. The famous "Quaker" machine was its first product but it has developed a large additional line, including the "Duke of Wellington" and the "Monarch."

The "Duke of Wellington" weighs 16,500 lbs. It is constructed entirely of iron and steel and all the small working parts are crucible steel castings, thus reducing the breakage to a minimum. It is equipped with a horizontal pug mill, 11 ft. 10 in. in length. The length of the machine over all is 20 ft. 3 in. and its width is 8 ft. 9 in.

mills, granulators, disintegrators, crushers, sand dryers, winding drums, elevators, clay cars, etc.

The Wellington Machine Co. has become famous for the excellence of the barrows and molds which it manufactures and these products have a constant and steady demand from the trade, an evidence of the satisfaction which they are giving. Wellington molds and barrows find a ready market from Maine to California.

Realizing the growing importance of the stiff-mud process of brick manufacture, and with the desire to meet all demands made upon them, the Wellington Machine Co. has commenced the manufacture of a line of stiff-mud machinery. The Wellington No. 2 stiff-mud ma-



The Wellington Foundry—Castings of Over a Ton Weight May Be Procured Here.

and height 7 ft. 6 in. The friction clutch pulley is 48 in. in diameter with a 12-in. face. The capacity of this big machine is from 40,000 to 50,000 brick per ten hours.

The "Iron Quaker" combined outfit includes a steam power brick machine and pug mill 7 ft. in length and a Wellington mold sanding machine, all arranged to be driven by one pulley. The "Iron Quaker" is also built in an extra heavy style weighing about 5,800 lbs. and having a capacity of about 20,000 brick per day.

chine weighs 12,000 lbs. and has a capacity of from 30,000 to 50,000 brick per day. It is suitable for the manufacture of brick, tile or hollow block and its excellence has been demonstrated in the most satisfactory manner.

Altogether, the Messrs. Bennett are to be congratulated upon the completeness of their establishment and on the excellence of their line of clay machinery and they can well be proud of the strong and successful enterprise which they have built up.



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No. 10

THE SALES END OF THE BUSINESS.

While every clay manufacturer will agree that producing a good quality of ware is no child's play, it is also becoming a well established fact that getting people to believe in the goods and buy them, is a science in itself. Profit and loss depend largely on the selling end of the business.

Production depends largely on physical effort with of course, a "power behind the throne"—but selling requires mental power of a high character and of the aggressive type. The clay products salesman must be able to overcome prejudice, skepticism, false economy and old-fogyism. He must be able to grasp a difficult situation and handle it with skill and tact. In fact the successful clay product salesman must be able to manage mentally the people to whom he desires to sell and compel things to come his way.

Rockefeller says: "The great cost in business is waste." If every prospect proved to be a customer, the cost of selling goods would be relatively insignificant. The cost of getting an order is usually comparatively small. It's the ones that are not landed that swells the selling cost and makes the average high. If the salesman gets one order after calling on six men, his selling cost for the one order is the time it took to try to sell the six, but as in advertising, he must keep on sowing the seed and time alone will show which is the fertile and which the barren rocky soil.

STRETCHING THE TRUTH.

Just why salesmen and others who have to do with the salesmaking end of a business should "stretch the truth" about the activities of their business, it is hard to fathom.

Probably it is because they should be optimists. Opti-

mists are generally enthusiasts, and that is a good thing—both for the business and the man.

It is so easy to say, "We're shipping five car loads of brick a day," when we are really shipping but one. Now one is big enough, but the extra four seems to make the picture better. Also, it allows for the shrinkage we feel the cynicism of our listener will put on our claim.

What's the use?

Somebody besides ourselves knows the truth. That gets to the public, and soon it takes a bigger exaggeration to allow for the skepticism we have aroused.

It is bad for the business. Employees have less faith in a concern—less faith in each other—in the managers—when they know it is a policy to "add a bit to the truth for good measure."

Then the exaggeration gets into the work of the employees—because men can't see lies make money for their employers without succumbing to a desire to do more or less of it in their own work for their own benefit.

Less care, less loyalty, less enthusiasm, less co-operation, less efficiency, because the house is a bit rotten at the heart.

This may sound like a sermon; so it is. We see the principle "work"—every day.

There is no place for exaggeration in the advertising or selling talk of a decent, self-respecting, honest business. A statement is either true or it isn't. The business that requires exaggeration is in need of a physician, just as the man who needs morphine "to keep going," is a sick man. He won't "go" for long.

Brick salesmen who make claims that cannot be backed up are the weakest competitors of a fellow who deals in facts.

The advertiser who exaggerates appeals only to the sucker market, and is daily losing caste among the growing class of business men who know truth is the trade keeper.

Exaggeration has done more to make salesmanship a "game," and advertising, a synonym of insincerity than any other bad practice of poor business men.

It is time to lend a hand—cut out one of the untrue superlatives tomorrow.

E. St. Elmo Lewis.

WHO'S GOING TO GET 'EM.

Who's it going to be, you or the other fellow, who is going to get the orders by having a creditable exhibit at the Clay Show? Better start things going now or it will be the other fellow.

No man ever made a brick so poor that some poor brickmaker couldn't be found who could make one poorer yet. Why not make the best brick? You can get more for them, besides the satisfaction of making a good article is something worth working for.

DID YOU FIND IT?

Did you find that second-hand repress, pug mill or mine pump you were looking for?

If not, without doubt some one of our thousands of readers have just what you are looking for. You can find the party by making your wants known in our Classified Ad Department, which is carefully scanned by all live clay men.

Write your ad short and to the point and send it in time for our next issue. The Rate is \$2.00 per inch for space used. You can say a lot of things for \$2.00. Try it.

THE TIME EXTENDED.

Owing to the large number of inquiries, recently received, regarding the Architectural Contest and in order that all those desiring to enter the contest may have an opportunity to submit designs, the time of closing the contest has been changed from November 15th to December 1st.

We republish the particulars and rules for entry as follows:

For the purpose of bringing out the opinions and suggestions of the architects of the country, "Brick and Clay Record" is going to give them an opportunity to earn valuable cash prizes through the submission of designs suitable for exhibition structures. The publishers therefore hereby offer the following cash prizes for the best designs of exhibit structures for use at the clay products show to be held at the Coliseum, March 8th to 12th, 1912:

First prize	\$100.00 cash
Second prize	50.00 cash
Third prize	25.00 cash

Specifications.

There is no limit placed on the elaborateness or cost of the supposed exhibit structure. The only limitation is that it shall show the use of the brick manufactured by the exhibitor through its use in wall facings, arches, columns, windows, walls, porches or other forms of architecture in which brick can be used to advantage. The structures must be planned to occupy a space not in excess of 20x50 ft. frontage on the aisle. Designs submitted should show the front elevation of the structure, but may also show the exposed interior.

A well known brick man and two well known architects in Chicago will be selected as judges and the utmost care and fairness will be shown in the treatment of the contestants. The contest will close December 1st, and all designs should be submitted to the publishers, 445 Plymouth Court, on or before that date. The plans should be enclosed in a blank envelope with no writing either on the design or on the envelope to indicate the author, but with the name and address of the sender enclosed in a blank and unidentifiable envelope attached to the copy submitted. When received the sealed address and the design will be marked for identification and separated so that it will be impossible for the judges to identify the authors of the designs submitted and the contest will be settled purely on its merits.

All designs submitted will remain the property of the publishers. Orders for working drawings of any of the designs submitted, may be furnished to the prospective exhibitors by the architects, by special arrangement between them.

As the time of this contest is limited to such a short period, it is expected and hoped that architects will get busy on same very promptly. Each one has the same advantage and the prizes will be easy money for some one.

Brickmakers throughout the country are urgently requested to induce architects of their acquaintance to enter designs in this contest. Address all communications to the Kenfield-Leach Co., 445 Plymouth Court, Chicago.

ANNUAL MEETING AT NEW ORLEANS.

The third annual meeting of the Association for Standardizing Paving Specifications will be held at the Hotel Grunewald, New Orleans, La.

The date of the meeting has been changed to the week of January 8th to the 13th inclusive, 1912. Delegates may

make reservations through Capt. W. J. Hardee, City Engineer, City Hall, New Orleans, La.

In order that the work of the various committees may be expedited and just criticism avoided if possible, the association requests that any one advocating a change in the specifications as published in the copyrighted proceedings of the second annual meeting held in New York this year, address at once, in writing the proper chairman, suggesting such changes with reasons therefor.

All communications addressed to the secretary after January 4th should be directed to the Hotel Grunewald, John B. Hittell, secretary-treasurer, 5917 Winthrop Avenue, Chicago, Ill.

NEW CHIEF OF GEOLOGICAL SURVEY.

The United States Geological Survey announces the appointment of Waldemar Lindgren as chief geologist, to succeed C. Willard Hayes, who recently resigned from the Survey. Mr. Lindgren has been a member of the Federal Survey since 1884 and has been in charge of its investigations in metalliferous deposits since 1907. He is the author of some fifty reports published by the Survey and in addition has contributed between fifty and sixty articles to technical and scientific journals. Mr. Lindgren is a trained mining engineer and has a world-wide reputation as an authority on the geology of ore deposits.

ANNUAL MEETING OF THE B. B. A.

The regular annual meeting of the Building Brick Association of America will be held in Chicago at the Auditorium Annex on Wednesday, March 6, 1912, at 9:30 a. m.

The "General Publicity" meeting will be held on Thursday, March 7th, at 9:30 a. m.

These meetings come about one month later than usual owing to the Clay Products Exposition, which will be opened in the Coliseum at Chicago on March 7th, 1912.

More detailed information concerning the meeting will be published later. It is announced at this time in order that all may have due notice and will make their plans to be present at these meetings.

BE SURE TO READ IT.

We publish, in the Paving Department, in this issue, the carefully prepared article on "Vitrified Brick Pavements—Their Expansion and Contraction," by Will P. Blair, Secretary of the National Paving Brick Manufacturers' Association, which was read by Mr. Blair before the Grand Rapids meeting of the American Society of Municipal Improvements. This article should be read carefully by all engineers and students of brick pavement construction. It clearly shows how comparatively simple a matter it is to construct brick pavements so that they will be ideal in use, preserve almost without limit their durable character, and insure a sanitary condition beyond that of any other pavement known.

KEEP ON BOOSTING.

Do not rest on your oars because you have loaded up your dealer with your product. That just starts the ball a-rolling. It is up to you to do some boosting to keep it rolling. It does not pay to depend too much on "letting Nature take her course." In the matter of making sales she is proverbially as slow as "the mills of the Gods." Moral: Get busy and keep busy boosting brick sales.

TEMPERATURE PENDANTS.

At the basis of all scientific management are quantitative measurements and one of the most notable developments in modern steam plant practice is the introduction of all



kinds of meters for weighing the coal, measuring the boiler feed water, determining the flow of steam, sampling the gases of combustion, recording the temperature of the water entering the boiler, measuring and recording the draft in the ash-pit and in the chimney and measuring the many other quantities that enable a steam plant engineer to compare his plant intelligently with other plants of the same class and to determine the magnitude of losses and the possibilities of improvement in operation and saving of fuel.

In the operation of a steam boiler, one of the most important quantities is the temperature of the gases passing to the chimney, since, other things being equivalent, this temperature is a direct measure of the portion of the heat of the fuel which is wasted or not utilized. If we assume a pound of coal having a heating value of 14,000 B. t. u. to be burned with 20 lbs. of air, which is about the smallest ratio of air to coal found in actual commercial practice, the temperature in the furnace after complete combustion should be about 2,500° F. above the temperature of the atmosphere. The temperature of steam at 150 lbs. gauge pressure is 366° F., and if it were possible to transfer all of the heat in the gases, above this temperature (and it is impossible to transfer any below this temperature) to the steam and water in the boiler, the efficiency of the boiler would be 88%; that is, the boiler would recover all but 12% of the heat of the coal.

As a matter of fact, no boiler reduces the temperature of the gases to the temperature of the steam. To do so would require an infinite extent of heating surface, since, as the temperature of the gases approaches that of the contents of the boiler, the rate of heat transmission per sq. ft. of boiler surface per hour falls lower and lower, being proportional to the difference in temperature between the gases and the water in the boiler. There is, therefore, a limit to the amount of boiler surface that it pays to put in. Beyond a certain point, the interest and charges on extra boiler surface amount to more than the value of the heat regained. Commercial practice, some years ago, established this limit of surface at about 10 sq. ft. of boiler surface per boiler h. p., but recent practice has shown that a boiler h. p. can be produced from much less surface, as 3 to 5 square feet or even less, and in some plants it has become a matter of routine to drive the boilers at about 60 per cent above the nominal rating of 10 square feet per boiler h. p.

Even disregarding the number of square feet of boiler heating surface employed to produce a boiler h. p., it is found in commercial plants that the chimney gases escape at temperatures considerably above the steam temperature, as at 450 to 500° at least, which represents a waste of from 20 to 40 per cent of the heat of the coal, depending partly upon the amount of air used to burn a pound of coal. In a 1,000-h. p. plant running 24 hours per day, 360 days per year, with a load factor of 50 per cent, and burning coal costing \$2.50 per ton, a 25 per cent waste of coal amounts to \$6,000 per year, not including charges for handling coal and ashes, therefore some little time and study to determine the extent of the waste in any given case is well justified.

Obviously, the advisability of putting in economizers or of making other changes in the equipment depends to a large extent upon the actual temperature of the gases as they leave the boilers. In some cases, this temperature is much higher than in other cases where approximately the same amount of coal is being burned on grates of the same type and the boilers are driven at the same rating.

Indicating and recording thermometers and pyrometers are sometimes put in for measuring the temperature of flue gases, but their use is not general, due partly to their cost and also to the fact that many types of instruments are not reliable or break down in service. There is therefore a demand for cheap and efficient means of determining flue gases, temperatures which the Green Fuel Economizer Co., of Matteawan, N. Y., has met by devising the temperature pendant shown herewith. These pendants consist, as may be surmised, of fusible alloys of the proper composition to indicate the desired temperatures.

It is an interesting fact that the melting points of such metals were found to be too uncertain and evasive to be used as temperature tests. That is, it is difficult to tell the exact point at which the metal melts, since it does not change suddenly from a hard solid to a liquid, as does water, but goes through an intermediate softening stage similar to iron and many other substances. Even after the metal is completely melted, a hard skin of oxide is usually found to have been formed upon its surface, which prevents the metal running easily and therefore is apt to confuse the determination of the exact temperature.

The Green Fuel Economizer Co., therefore, devised the expedient of using the tensile strength of the metal, instead of the melting point, as the true indication of temperature.

In actual use the pendants are hung upon a small hook made upon the end of a long wire, which is introduced into the flue so that the pendant will be at the desired point. The best way is to begin with the lowest temperature pendant and proceed until the one is found which will not fall off after 5 or 10 minutes' exposure. The temperature will then lie somewhere between the temperature marked on the last pendant and the next to the last pendant used. In doing this, it is quite essential that several different points in the flue be tried, as it very frequently happens that one part of the flue is occupied by gases much hotter than the gases in other parts of the flue.

At present the Green Fuel Economizer Co. has perfected pendants for three temperatures, i. e., 425°, 500° and 550° F., representing respectively the temperature at which the use of the economizer is justified with coal at commercial prices, the temperature at which an economizer is a good investment in all cases, and the temperature at which neglect to install an economizer becomes an inexcusable waste.

The Green Fuel Economizer Co. advises us that they will be pleased to send samples of these temperature pendants to anyone connected with a steam plant who would be interested in determining the temperature of chimney flue gases.

TEST OF GOOD CITIZENSHIP.

"Good citizenship demands that all, individually and collectively, should do their full part in inculcating principles, and bringing about practices which will stop the ravages of the tremendous fire waste that is scandalous because obviously preventable."—Ex.

MAMMOTH PLANT PROJECTED

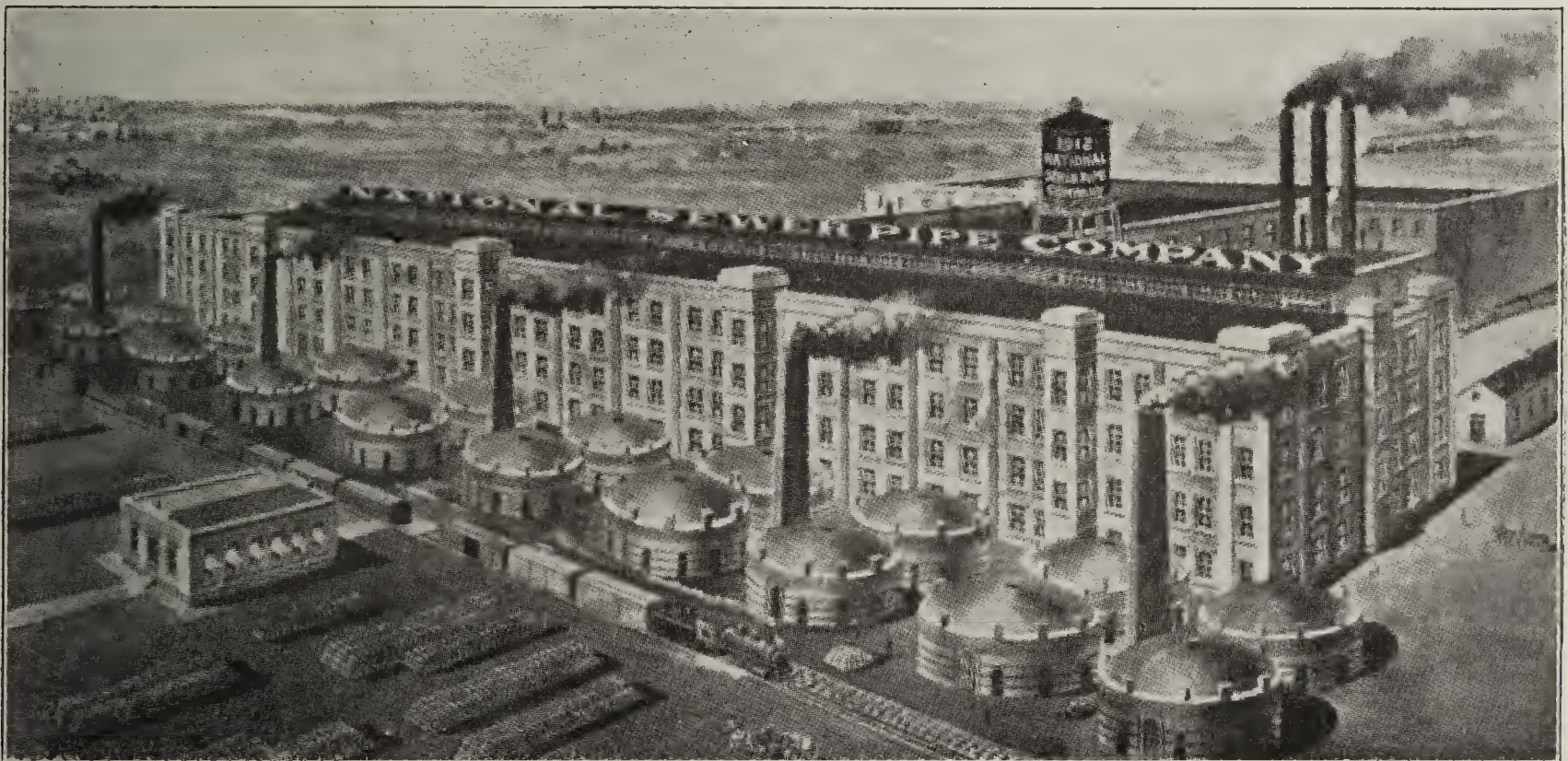
We show here a cut of the proposed plant of the National Sewer Pipe Co., to be erected at Webster City, Ia., just sixteen miles from the famous Lehigh clay field. This company which has just recently been organized will get its clay from its clay lands at Lehigh, where it owns over 30 acres of as fine sewer pipe clay as can be found in the West. The clay runs from 30 to 100 feet deep and will last the company for several generations. The clay has been thoroughly tested as to its adaptability for making sewer pipe and large drain tile, and it has proved to be as good as the best to be found west of the Mississippi.

The company is composed almost entirely of the business men of Webster City and Lehigh, having been organized largely through the efforts of the secretary and manager, P. W. Hearn, who was formerly the secretary and treasurer of the Lehigh Clay Products Co., of Lehigh, Ia. He was one of the charter members of the Lehigh Company, when they came out to Lehigh, Ia., from Indiana, in the spring of 1906 and purchased the the clay land now owned and operated by that company. This company, composed entirely of eastern capitalists,

company will also have the benefit of a lower freight rate on coal which will mean no small saving in a year.

The plant, as planned, will cover about five acres and will be located on one of the finest factory sites, in the west, consisting of 32 acres situated just west of the city limits between the right-of-way of the Crooked Creek Railroad and the Illinois Central. The main building which will be used for drying the pipe will be 90 feet by 400 feet and four stories high, besides a 6-foot basement.

The machine room will be located just back of the dry-room and will be 80 feet by 90 feet and the same height as the dry-room. Back of this will be a large clay room for storing the clay. This room will be 240 feet by 80 feet and the same height as the balance of the building. The power house will be located just to the right of the machine room, as shown in the cut. Directly in front of the large dry-room will be erected twenty 36-ft. kilns so arranged that one stack will accommodate four kilns, each kiln having its own independent flue. In front of the kilns will be the loading track which will be sunken so the floor of the cars will be on a level with the concrete pavement and runway to be built around the kilns.



Splendid Plant Planned by the National Sewer Pipe Co. to be Erected at Webster City, Ia.

was the first to bring out the real merits of the Lehigh clay for large pipe. They were followed a year later by the Lehigh Sewer Pipe & Tile Co., which owns one of the finest plants of its kind in the west.

Mr. Hearn soon discovered that the companies with plants located directly by the clay beds were more or less handicapped for want of room to build their plants on account of the hilly conditions and for want of adequate railroad service, being located on a couple of spur lines and having no through lines passing near the location. After keeping a carefully compiled cost accounting system, he discovered that it would be cheaper to ship the clay in the raw state to Webster City, where he would have plenty of room to build a plant with a large yard on which to stack the finished product and at the same time be located on two main lines of railroads, the Illinois Central and the Northwestern, than to ship the manufactured product which must come over the same route to get onto these main lines. In this location the

This will greatly facilitate the loading of the cars, since most of the ware will be shipped direct from the kilns. In front of the loading track there will be a yard for storing ware that will be 300 feet wide and three or four times as long, whereon hundreds of cars of pipe can be stored when necessary.

The clay will be loaded at Lehigh with a steam shovel directly into regular railroad dump cars and elevated into the large clay room where it will be dumped and conveyed on three endless belt conveyors to as many nine-foot heavy-duty dry pans. On the second story, just above the six eight-foot wet pans, will be located a large clay room to store the clay when ground. Just ahead of these pans will be located two sewer pipe presses with room for the third as the trade may later demand.

With this equipment the company will have a capacity of about 200 tons of ware per day or from 10 to 12 cars of pipe. It is the object of the company to so equip the

plant that two large kilns of ware will be turned out daily.

The company will install its own lighting system so that on dark cloudy days and winter afternoons no time need be lost. The entire building will be erected as nearly fire-proof as it can be made, using concrete for foundations and brick for all walls. When completed this will undoubtedly be equal to the best equipped plants of its kind in the country. Experts have been at work on the present plans for more than a year and much careful research and study have been spent thereon. The company is making its arrangements to begin building in the early spring or as soon as the frost is out of the ground. The most skilled engineers will be employed to superintend the building of the plant, which according to estimates already made will cost about \$197,000 to erect.

The officers and directors of the company are as follows: Directors, J. L. Kamrar, vice-president of the Hamilton County State Bank; H. R. Dodge, proprietor, Dodge & Baker Co.; P. W. Hearn, formerly secretary and treasurer, Lehigh Clay Products Co.; J. W. Hittle, secretary Tuscola Supply & Construction Co.; L. E. Crowter, retired farmer and capitalist; W. A. Johnson, director, Hamilton County State Bank; W. O. McConnell, farmer and stockman; W. J. Zitterell, general contractor, and J. L. Peterson, general insurance. The officers are: J. L. Kamrar, president; H. R. Dodge, vice-president; P. W. Hearn, secretary and manager, and C. H. Clifton, treasurer.

A NEW OIL ENGINE.

The well known Anderson Foundry & Machine Co., of Anderson, Ind., which has for many years manufactured all kinds of clay working equipment, including dry presses, stiff-mud brick and drain-tile machinery and soft-mud machinery, has begun the manufacture of a crude and fuel-oil engine, which promises to become very popular in the clay working industry, as it effects a large economy and seems particularly suited to the clay workers' needs.

There have been various oil engines put on the market, but there has been much fault found with these in the past because of their defects and inadequacy. One trouble with them has been that they carbonized and choked up easily. Another fault has been the ignition troubles to which they were subject.

In the new Anderson oil engine, however, all these defects seem to have been eliminated and under practical tests, extending over long periods, this engine has met all requirements in the most satisfactory manner.

For fuel, the new Anderson engine will use either crude or fuel oil. The kerosene engine gives perfect combustion and leaves no residue or carbon whatever. The cost of operating this engine is said to be exceedingly low. In fact, it is claimed that it can be operated with one gallon of fuel oil per horsepower per ten hours. For an eight horse-power engine, this would be a consumption of eight gallons per day of ten hours, at an average cost of about 20 cents per day. This engine is constructed on the well-known two-cycle principle, doing away with all valves, rocker arms and other valve mechanism, thereby making a cleaner passage for all burnt gases.

The working parts of the Anderson engine are encased, making it much cleaner for commercial use and insuring better lubrication. To start this engine a small burner is provided at the back, which can be heated up in about five minutes' time. Once hot, no further attention is required for ignition. Oil is forced in the right quantities into the igni-

tion chambers automatically, making a gas which mixes with the air in the cylinder. There is no trouble, delay or failure in starting these engines promptly, under any conditions. One of the essential parts of this engine is the governor, which controls the air and the oil pump at the same time causing perfect combustion. Force feed lubrication is used throughout. The manufacturers claim for this engine many superior features and guarantee its entire satisfaction. This engine is made in any size required and special engines will be built to order.

THE BOYD PRESS IN CANADA.

The rapid increase in population in the Dominion of Canada and the development of the vast resources of that country, have brought about an increased demand for building material, and pressed brick has proved particularly acceptable to the architects and builders of that country. A large number of the leading brick plants of Canada are equipped with the Boyd brick press and among these are some of the most successful plants on the continent.

One of the most important of these is the Milton Pressed Brick Co., Ltd., of Milton, Ont., of which Mr. J. S. McCannell is the managing director. At this plant there are six Boyd brick presses in operation at the present time, having a total capacity of about 120,000 brick per day of ten hours. As this plant has been operated to a considerable extent on overtime for several years past, the actual production without doubt far exceeds this, averaging probably fully 150,000 brick per day. The Milton plant has been operated for 22 years and was originally operated with the Boyd press equipment, the first outfit being one 4-mold Boyd press of the early design and this press has been in continual operation every year until very recently when it was replaced by a new modern Boyd "Special." The plant still has one of the old style machines in operation which is producing first class brick at the present time. For a number of years, this machine worked night and day continuously.

There is no question but what the product of the Milton Pressed Brick Co. is of the highest quality, well known throughout the entire Dominion. It is made in a large number of varieties and has proven very popular among architects and builders.

In the province of Alberta in western Canada, the Alberta Clay Products Co. at Medicine Hat, recently installed a new 4-mold Boyd press.

Another successful plant is the Calgary Pressed Brick & Sandstone Co. This plant is operating two of the Boyd presses and turns out a high quality product.

A new plant is now being erected at Redcliff, Alberta, known as the Redcliff Clay Products Co. Mr. F. F. Woodcock is the managing director of this company and a Boyd press has been recently shipped there and will soon be in operation. In connection with this press, the new company was also furnished by the Chisholm, Boyd & White Co., with one of their 9-ft. standard Boyd dry pans and other equipment.

The Chisholm, Boyd & White Co. have furnished equipment for other leading plants in the Dominion and the extent to which their presses and other machinery are used, in Canada, is very surprising in view of the 27½ per cent duty which American machinery has to pay to enter the Dominion. It is evident that the users of Boyd presses are perfectly willing to pay this duty because of the high character of the machinery furnished to them.



NOTHING NEW UNDER THE SUN.

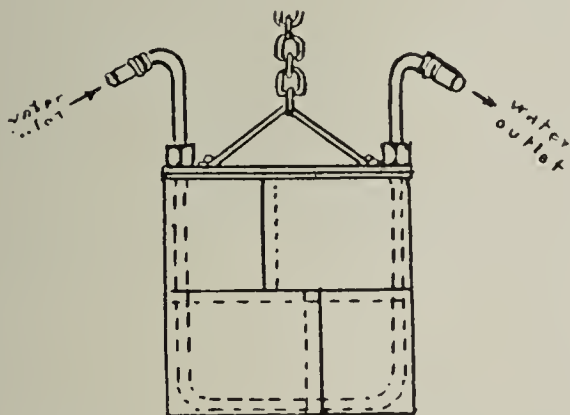
A manufacturer of fire brick and stove linings in Massachusetts writes us the following interesting letter:

"In 'Brick and Clay Record,' of October 1, appears the description of a kiln invented by John L. Gamble and John Bryan of East Liverpool, Ohio.

"The down-draft principle may be new as applied, but the same methods for up-draft were employed in burning fine ware in Staffordshire, England, more than fifty years ago, and in Nova Scotia about forty-eight years ago, with flues communicating under the bottom, and opening in the center; low bags, the same having small openings all around; top being covered with perforated tile. A model of this same kiln was made of red clay in Staffordshire, England, and sent to Sargent Edward Poole of Enfield, Nova Scotia (a Crimean war veteran) about 1860. A kiln from this model for burning brown ware was built by Robert Malcolm & Sons at Enfield, Nova Scotia, between 1860 and 1863. It was a fine burning kiln. So there is nothing new as applied to up-draft. Sargent Poole used this same model to beautify his lawn as a vase, with vines growing through the openings in the top."

FIRE-CLAY KILN DAMPER.

Of the many devices used in the brickyards for dampers there are only a few which give satisfaction. The damper usually gets too hot and warps. In order to overcome this trouble a water cooling system can be arranged in the damper, which will keep the same from warping. The water is carried through iron pipe, which is molded into the fire slabs, which are used for this



Design for Water-Cooled Damper.

damper. On the one side the connections are made for the inlet of the water, which will discharge from the other end after having circulated through the damper.—Tonindustrie, Z.

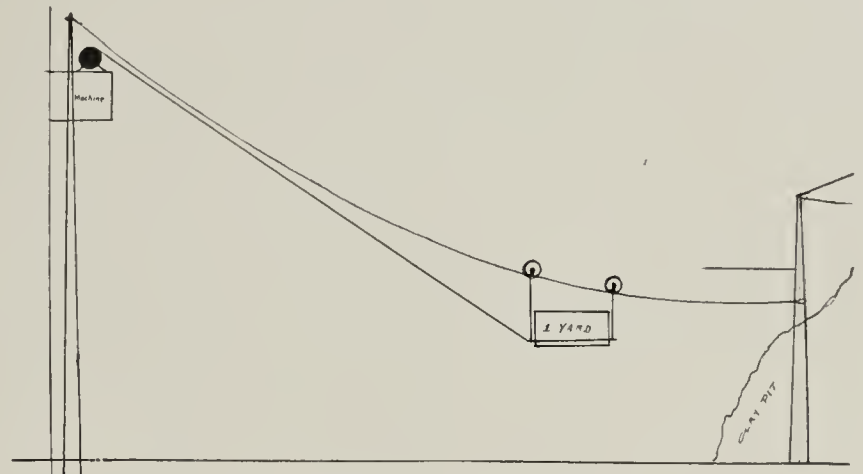
ASKS DAMAGES.

Suit has been brought against the Excelsior Brick Co., Denver, Col., by Alfred Mitchell for \$10,000 damage for injuries which he claimed he sustained while acting under the direction of the foreman who ordered him to feed clay into the disintegrator without warning him of the danger connected therewith.

HOME MADE AERIAL TRAMWAY.

Mr. N. Currie, of Glencoe, Ont., Can., has devised a home-made aerial tramway, which he has used for several years with good success. He tells us of his system as follows:

This method has given better success at our plant than the ground car, as I have tried both. Several clay manufacturers who have formerly used cars on ground tracks.



Home-Made Aerial Tramway.

after seeing my system in use, have discarded their cars and adopted the overhead cable system.

The advantages of this system over the ground car are many. It is more easily and cheaply constructed. It is more easily shifted in the clay pit as the bank of clay is being removed. Three men will shift it in half an hour. The box can be lowered in the pit so as to avoid the necessity of throwing the clay to a height in loading. The cable rests on one post, at the machine, up and out of the way at any height desired. My cable extends 300 ft. from the machine to the clay pit—no center supports being required.

I used 1½-inch cable, which I procured of the Chicago House Wrecking Co., Chicago, Ill. They have miles and miles of this which came out of the old street car cable system, which can be purchased at 5c a foot which is about one-twentieth of the original price, and it is worn just enough to make a smooth track.

The wheels I took from a worn out automobile, the grooved fellers just fitting the cable. The box I made of inch elm lumber, one 2x6 scantling extending from each wheel down to the box to attach to the bar through the box four inches from the bottom to support the box to the hanging scantling. The box turns over to unload the same as fertilizer carriers, often seen at the up-to-date livery stables.

Great caution must be taken to have each end of the cable fastened to a log 10 ft. long, buried 8 feet in the ground at the upper end. The lower end winds around a windlass giving the desired tension.

This system is especially adapted for clay banks that are in the line of the machine so that the car comes down along the side of the bank.

I have had three years' experience with this system and will be glad to give any further information to those desiring same.

SUPERINTENDENT KILLED.

John Sanderson, fifty years of age, had arrived in Marshalltown, Ia., on October 27th to take the position as assistant superintendent of the new plant of the Marshalltown Vitrified Sewer Pipe & Tile Co., when he was struck by an Iowa Central passenger train on the following day, sustaining injuries that caused his death an hour later. Sanderson was crossing a railroad bridge when the train caught him and whirled him about 25 feet, breaking his back and fracturing his leg. Little was known concerning Mr. Sanderson, but a letter in his pocket indicated that his wife was in Akron, Ohio, on a visit.

LEGAL DECISIONS APPLICABLE TO BRICK.

Measure of Damages and Rights of Seller, After Refusal of Goods.—Where the seller elects to retain the goods tendered to and refused by the purchaser, the Supreme Court of Appeals of West Virginia says that the general rule for the measure of damages for a breach of the contract by the purchaser, is the difference between the contract price and the market price, at the time and place stipulated for the delivery thereof. But if the seller elects, as he may, to treat the goods refused as the property of the purchaser, and after notice to sell them for his account, the measure of his damages is the difference between the selling price and the price realized on the resale thereof, fairly made, in good faith, by the seller.—*American, Etc., Co. vs. Flat, Etc., Co.*, 70 Southeastern Reporter, 756.

Exhibition of Sample Does Does Not Always Make a Sale By Sample.—The fact that a sample is exhibited does not necessarily make the transaction a sale by sample. The contract must evince intention to contract by sample. And as a general rule, when the contract is in writing and there is nothing therein indicating that a sample was used or referred to, oral evidence is not admissible to show a sale by sample.—*Supreme Court of Appeals of West Virginia in American, Etc., Co. vs. Company*, 70 S. E. Rep. 756.

Renunciation of Contract.—Renunciation by one party of a contract which will excuse performance by the other, the supreme court of appeals of West Virginia holds, *Bannister vs. Victoria Coal & Coke Co.*, 61 Southeastern Reporter, 338, must be unequivocal and absolute, and deal with the entire performance to which the contract binds the promisor.

Computation of Damages From Unlawful Competition and Infringement of Trade-Mark.—In taking an account of the profits made by the defendant in unlawful competition with the plaintiff by infringement of the latter's trade-marks, trade-name, etc., the supreme judicial court of Maine holds, *W. R. Lynn Shoe Co. vs. Auburn-Lynn Shoe Co.*, 69 Atlantic Reporter, 569, that it is not to be assumed that all the profits of the defendant in his business were through such unlawful competition, and a finding that certain profits were not so made will not be set aside in the absence of convincing evidence to the contrary. Sales made by the defendant under a trade-name resembling that of the plaintiff, to persons who knew the goods were manufactured by the defendant, and also sales made to persons at a distance who had no knowledge of the plaintiff's existence, cannot be assumed to be injurious to the plaintiff if the goods themselves are not impressed with deceptive marks. In determining the profits made by a defendant corporation in unfair competition with the plaintiff, it is ordinarily proper to include in the cost of manufacture and sale reasonable sums paid in good faith as salaries to managing officers; but where such managing

officers are practically the corporation, and are the parties really guilty of the unfair competition, sums drawn by them as salaries should not be included in the cost of manufacture and sale. In addition to the profits made by the use of the latter's trade-marks, trade-name, etc., the plaintiff may also recover for losses in his own business caused by such unfair competition. If such loss results partly from such unfair competition and partly from other causes independent of the defendant and his acts, the plaintiff can recover only for so much of the loss as he shows to have resulted from the defendant's unlawful acts. It is not necessary, however, for him to prove such loss, in separation from the rest, with precision or definiteness. It is sufficient for him to adduce enough evidence to enable the tribunal to make a reasonable probable estimate by the exercise of intelligent judgment.

The Liability of a Dormant Partner.—A dormant partner as such, like any other partner, the St. Louis court of appeals holds, *Kneisley Lumber Co. vs. Edward B. Stoddard Co.*, 109 Southwestern Reporter, 840, is liable on all contracts entered into on behalf of the partnership. Between themselves the active members of a firm have no authority to bind a dormant partner as such by contracts outside the scope of the partnership. But as to third persons dealing with the ostensible partners this limitation of authority cannot be applied. As a secret partner is not liable for the debts of the firm until discovered, he should not be allowed, by making himself known, to upset a contract made by an innocent third party with the active members of the firm. Such third person cannot be affected by the false colors held out by concealing the fact of the existence of another partner, and the contract, though outside the scope of the partnership, will be enforced against the firm as though the firm was composed only of the active members who made the contract, or ratified it after it was made.

Technical Words and Business Customs.—The testimony of witnesses is admissible to explain not only technical words of art or science used in contracts, but, the supreme court of Illinois holds, *Steidtmann vs. Joseph Lay Co.*, 84 Northeastern Reporter, 640, words or phrases having a local meaning or a special meaning in a particular calling, trade, business, or profession. Such evidence does not contradict or change the written instrument. The presumption is that such terms were used according to their understood meaning in the place or the business with reference to which the contract is made, and evidence as to such meaning is the only method of ascertaining the intention of the parties in entering into the agreement. A person entering into a contract in the ordinary course of business is presumed to have done so in reference to any existing general usage or custom relating to such business. And such general custom and technical meaning of words may be proved without being specially pleaded.

Payment and Delivery of Goods Concurrent Acts.—Where there is a sale of goods to be paid for in cash on delivery, the supreme court of Oklahoma holds, *Masoner vs. Bell*, 95 Pacific Reporter, 239, that payment and delivery are concurrent acts. In such case payment is a condition precedent to passing title to the vendee, and if on delivery of the goods payment is refused, and the same are appropriated by him to his own use, an action against him for the value will lie by the vendor.

The Streator, Ill., newspaper states that the Streator Paving Brick Co. is making extensive improvements at its plant including the rebuilding of its machine houses which will be of fireproof construction.



VITRIFIED BRICK PAVEMENTS.

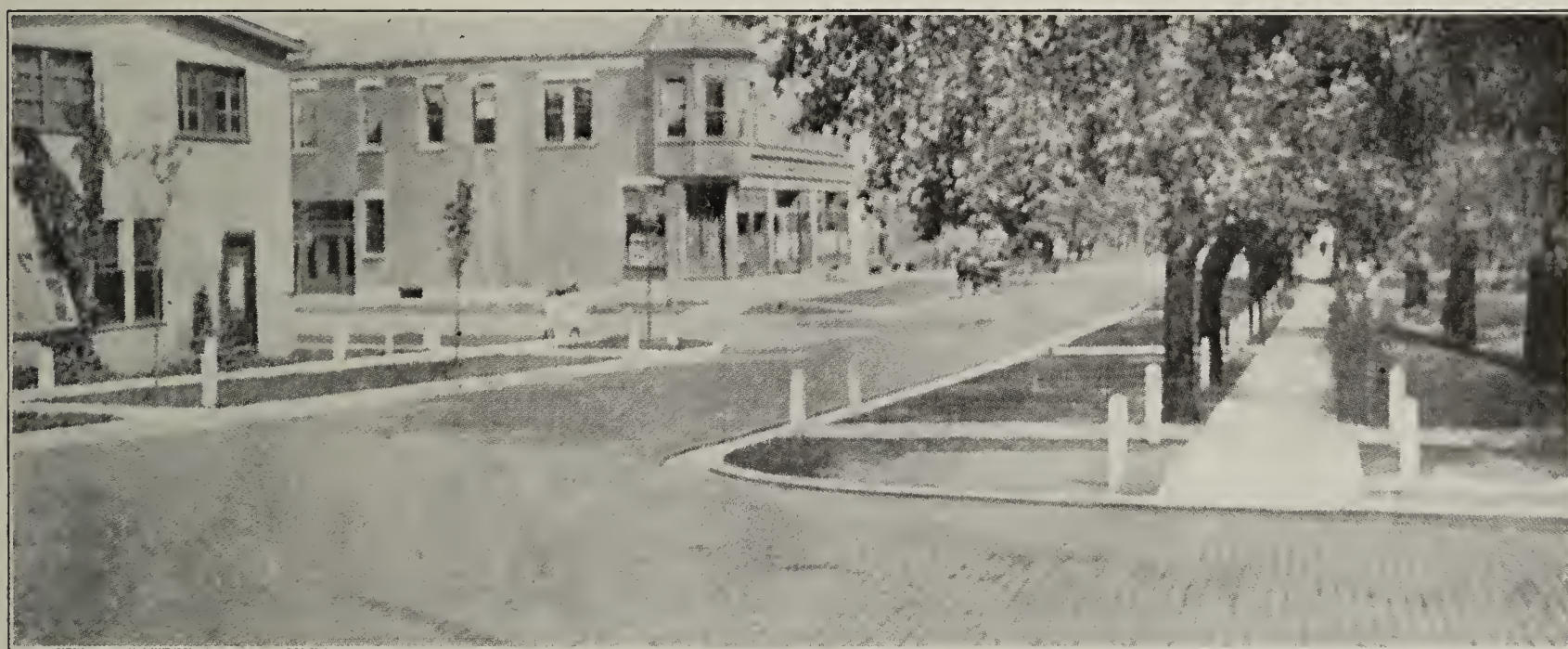
Transverse Expansion Joints Unnecessary—Necessity of Longitudinal Expansion Joints and Uniformity of Cement Filler—Contraction and Expansion.*

By Will P. Blair, Corresponding Secretary National Paving Brick Manufacturers' Association.

The extent of injury done to brick street pavements from contraction and expansion has been greatly magnified on the one hand, and the difficulties in preventing any injury at all have been enlarged upon to an exasperating degree. We freely grant that there are behaviors in structural materials, particularly of cement, brick and iron, that are not fully and completely understood, in spite of the research work that has been done by various investigators. But that is no argument at all against the use, within the range of what we do know and even beyond that which we know, even if we should encounter hazardous and strange phenomena. In fact, if we are to await

contracts calling for expansion cushions, very few streets are found where the provision exists. In spite, however, of the almost entire lack of provision for expansion and contraction, out of more than 2,700 street intersections, but 27 ruptures occurred. Twelve of these were examined personally by the writer, and in every case no provision for expansion relief whatever was found. In the remaining, I was assured by Mr. Abbott, the engineer in charge of repairs in that city, the same lack was in evidence. Throughout the city quite a few cracks occurred away from intersections, but these are not really serious to the utility of the pavement because it very seldom occurs that rutting follows; at the worst, no greater injury follows than that which occurs to each individual brick where soft fillers are used. In no case, however, have they occurred where expansion cushions have been provided.

There occurred a rupture at the intersection of Decker avenue and East Eightieth street, neither of which had any



a perfect knowledge and information concerning all utilitarian matters but little progress would be made and we would be without the enjoyment of many useful and pleasurable things in life.

The city of Cleveland has afforded a field of study during the past season much beyond that of any locality in the country. The season has been very changeable in temperature. Sometimes a variation has occurred of more than 40 degrees within a period of one week, but in the experience of many years preceding the temperature has not been subject to such great variations. While it is entirely fair to say that 75 per cent of the streets of Cleveland are properly cement filled, provision for expansion and contraction has not been considered of very great importance, and to a very large extent has been neglected. Even with the streets built under

provision at all for expansion relief along the curb or transversely. The expansion force necessarily found relief at the intersection. You may ask, why at the intersection? Simply because it was the only place that the concentration of the forces found in the four streets could concentrate. The force of the expansion concentrated at the intersection square, in comparison with that directed against any other portion, was the greater and so the resistance was weak and could but yield to the strain. Any other part of either street could be approached by the force of expansion concentrating from but two directions, but in the intersection the force was fourfold. The compressive resistance was no more than in a single street, so that a rupture followed. Observing gentlemen in the neighborhood informed me that it raised five feet at the intersection. A nine-year-old boy with mental equipment for accuracy informed me that the men did not know what they were talking about, but that he did, as he

*Paper read before the American Society of Municipal Improvements.

measured it with a rule, and the highest portion of the rupture stood just $3\frac{1}{2}$ feet above the sand cushion. It could easily be discerned that there was a slight movement in these four streets at a distance away from the intersection of more than 100 feet. Evidences were apparent that along with this movement had been an outward force pushing against the curb, increasing as it approached the place of rupture.

Fifty-six hours after the rupture a change of more than 40 degrees in temperature had taken place. The contraction that followed drew the pavement away from the curb. Near the intersection and next to the curbs on either side, the contraction showed itself to be a full inch.

Another rupture, of which I was unable to secure photographs, I had an opportunity to observe while the expansive force was in operation. Evidences were easily noted 200 feet back in one direction from the intersection, in which were placed four manholes. The portion of the street approaching this intersection from the opposite direction had the advantage of a much more perfectly constructed pavement. It was built by a different contractor and under different specifications. The cement filler was in the joints, filling them completely from top to bottom. The mixture was uniform and the expansion cushion fairly adequate. This portion of the street, although subjected to the heat of the sun equal to the other portion, with the assistance of the four manholes, stood apparently immovable. It had no transverse expansion cushion, but relief from expansion was sufficient at the curb; at least with what was held in compression the brick retained perfect contact with the sand bed.

The street opposite, approaching the intersection in which the expansion movement was particularly noticed, was not so well constructed. The cement in the interstices was irregular: the sand cushion had not been properly compressed, so that there was an uneven flow of the sand in the interstices from the original rolling of the brick; there was no compressive relief apparent in the street at all. As the intersection was approached, it was observed that the outward force of the street was much more severe near the rupture than 100 feet away from it, but the shattering and the crushing were all confined within that portion of the street improperly constructed. No part of that portion of the street properly constructed was harmed at all.

It so happened that prior to the construction of the Indianapolis Motor Speedway a temporary brick surface was put down about 16 feet in width and 200 feet long, for the purpose of merely testing a brick surface as to its adaptability as a race course, before it was finally decided to brick the entire track. This particular portion was poorly constructed, particularly in the application of the cement filler; the interstices were neither filled completely to the bottom, nor were they full and flush with the surface. And, though we warned of disaster to come and urged that it be eliminated, for the sake of economy it afterwards became a part of the track as finished. But little of this entire track was finished with the expansion cushion—simply a case of putting off until a more convenient season. Along this temporary portion, no expansion provision had been made. On account of weakness of the cement filler, it was unable to sustain a uniform compressive strength with the rest of the pavement. A bulge occurred at this weak side. The superintendent of the speedway at once concluded that he ought to relieve the strain by taking out two courses of brick across the entire pavement. Proceeding from the point of the rupture in the better constructed portion of the pavement, he soon discovered that as he weakened the

pavement there was a slight movement or creeping of the entire pavement. He then went to the opposite side of the track and began to take out two courses of brick at that side of the pavement, but there was a time when the equilibrium was past and the resisting force at the center of the pavement was too weak to withstand the expansion pressure and the force found relief in a sudden crush, frightening the workmen so much that one declined to have anything more to do with it.

We secured photographs which show clearly two things to have occurred: The weak portion received the greatest rupture from the crushing force; the pavement sheared in the center and crept on the sand cushion the full width of the brick more than the other portion. The other portion of the pavement, being uniform throughout in strength, did not show a rupture, but simply closed up the crevices from which had been extracted two courses, and stopped. It is clearly obvious that the expansive force of this portion of the pavement had found relief in compression. Yet in this stretching out process no crack occurred, so tough and strong was the pavement in its monolithic structure.

It had been decided by the owners of the speedway to change an overhead bridge to a subway passage. This change, in the interest of economy, necessitated taking up a strip of pavement the full width of the track. The superintendent, on account of his experience as described, was a little at a loss to know how to proceed. The writer advised that, as he took out his first line across the track, he insert wooden blocks in a way to be drawn simultaneously and to do the work in the night time, taking advantage of the lowest possible temperature. This course was pursued, and an opening made, which was followed by extreme high temperature. The closure followed from either direction nearly the entire width of the brick and then the pavement, by contraction, receded one-half the width of its advance and again no crack occurred in this action of contraction and expansion.

From this observation and experience gained, we are confirmed in several matters, sustaining our No. 1 directions. First, demonstrating conclusively the force at work, destructive of the courses of brick that are found on either side of every transverse expansion provision. It is simply a jamming together—a movement of the entire street in opposite directions toward a weak portion. Many examples of this character can easily be seen in this city of Grand Rapids. It confirms us in the view that no transverse cushion should be provided. Second, it fully supports our contention and insistence for a uniform mixture of sand and cement. It is easily discerned that much of the expansive force can be and is taken up in compression. If the pavement is uniform in strength much relief in compression is afforded and can be depended upon. Third, in every operation of compression from two opposite directions, a certain portion of relief at least is diverted to another direction. You may say that this last statement is not exactly borne out by the observations and experiences cited. But suppose it is not entirely proven and you do provide for a full and complete relief of all of the expansive forces in the other two directions by a cushion along the curb, then you have at least relieved the pavement of one-half its expansive force, and with this, together with what relief is found in compression, the pavement is relieved or held intact to such an extent that it is scarcely subject to any injury whatever from expanding and contracting forces.

To further assure us that no bad results will follow if proper provision for expansion is made along the curb, it is necessary to heed the importance of having the ce-

ment filler uniform in strength, so we insist that the sand cushion be compressed in order that there shall be no flow of sand into the joints, which should be occupied in full by the cement filler, thus affording a uniform strength throughout the monolithic structure, lessening the chances for rupture; for just to the extent that the filler lacks in strength and uniformity will a crack, rupture or destruction of the pavement follow.

To what extent cracks appear in pavements, or if at all due to the variations that follow a wet and dry condition we are unable to say. That a certain minimum amount of contraction and expansion parallels the condition, no one can doubt; but it is believed that the strength of a monolithic structure is such that a crack occurring from such cause rarely takes place. There is no question but that cracks frequently occur due to the expansion caused by frost, or more particularly resulting from the resisting force of the frozen ground underneath the pavement. Dry earth is in no way affected by low temperature. The action which is disastrous to all pavements alike, and all kinds of roadways, in fact, which results from low temperature only happens when moisture is present. The remedy, therefore, is found in perfect drainage.

We have, then, but two elements with which to deal in preventing cracks and ruptures in cement-filled brick pavements. First, simply a provision along the curb for an expansion cushion, which is an easy matter and only requires very simple implements to make effective the necessary provision. The trouble generally has been either a determination not to make proper provision or undertaking to do it without any implements at all, merely substituting some one makeshift or another for the purpose.

As to the cracks due to low temperature, it is simply a question of drainage. The manner and method of proper drainage are controlled entirely by the character of the soil and grades. Most soils are easily drained by tiles along either within or without the curb, surplus water being taken out through "T" outlets at frequent intervals. Long drains underneath the roadbed are obviously objectionable for many reasons, though they are sometimes resorted to. A better method of drainage, where the soil is such that by capillary attraction the moisture climbs to the highest point, is by alternate side drains heading slightly beyond the center line.

A GOOD ROADS GATHERING.

Rochester, N. Y., is the scene this week of an important gathering of good roads enthusiasts, the American Good Roads Congress now holding their eighth annual convention at that city.

Paving brick interests are being well represented at that session and exhibits are being shown there by the National Association of Paving Brick Manufacturers and also by the paving interests manufacturing the Dunn wire-cut-lug block. It is believed that these exhibits and the presence of the paving brick men, will be of value as a missionary movement among the good roads men, to teach them the gospel of brick's superiority.

PAVING NOTES.

The Globe Brick Co., at New Cumberland, W. Va., are shipping one car of brick per day for the paving work on the roads of Ritchie district. The brick are of the new patent interlocking type, which are growing in popularity.

The Saginaw (Mich.) Paving Brick Co. has recently received a big order for the addition to the plant of the

Plate Glass Co., at Saginaw. Between 100,000 and 200,000 brick will be needed. This company is also filling many small orders as well as furnishing brick for the New St. John's Congregational church at Saginaw.

FREQUENT TESTS NECESSARY.

The paving brick manufacturer should make frequent tests of his brick, from every kiln or every carload shipped, that he may know whether he is producing brick that meet the specifications. Moreover, by having a standard rattler at his factory, he can improve his product by testing the effect of all changes in materials, in methods of preparation, in making or repressing and in drying or burning.—Standard Tests of Paving Brick.

BRICK PAVING POPULAR IN TEXAS.

Our Texas correspondent informs us that while the demand for pavers in Texas is not as brisk as the manufacturers of this class of material would wish, still there are some good contracts looked for in the near future in the different towns and it is expected the showing for the year as to this character of material will be equal, if not better, than that of last year. In Dallas, during the month, some good contracts for paving with brick were let by the city commission and similar work is in prospect in other towns.

One feature of the improved situation in Texas is the increase in the demand for paving brick in smaller towns where formerly no kind of paving was done. The spirit of civic betterment in the smaller towns has had a rapid growth during the last year or two, and in some instances towns of 10,000 to 15,000 population are ahead of cities of double and treble their size in the matter of street paving.

ENCOURAGING REPORTS.

Reports of municipal improvements, from various parts of the country, are of an encouraging nature. Many cities are considering the paving of their streets with brick, among the cities which will pave with brick, are the following: Toledo, Ohio, will lay a street with brick on concrete foundation; Catlin, Ill. will construct brick paving to the amount of \$35,000; Palatka, Fla., will pave 15,000 sq. yds. with brick; Huntington, W. Va., will pave several streets with No. 1 vitrified brick; and Cleveland, O., will add several more brick-paved streets to her famous system.

ORDERS STILL COMING.

We learn from an eastern correspondent that the Pennsylvania Clay Products Co., of Pittsburgh, has been given an order for 68,000 paving brick by the city of New Castle for immediate delivery. The city wanted delivery by October 15, but because of the rush of business at the factory, the company was unable to make delivery so soon. This is but an instance which proves the statement in the last issue of "Brick and Clay Record" that paving brick manufacturers were crowded with business.

ENTITLED TO BETTER TREATMENT.

The city of Minneapolis has laid about \$600,000 of new paving this season, aggregating 125,000 square yards of creosoted block paving and only 8,000 yards of brick, the latter costing \$20,000. The low quantity of brick paving being used each year in the streets of Minneapolis, is a disappointment to the brick manufacturers and dealers who feel that such a superior paving material as brick is, should be entitled to a better representation and that the needs of the business streets demanding it should be considered also.



HINTS FOR LAYING DRAIN TILE.

Oftentimes tile manufacturers are asked by their customers for advice in laying tile. This the manufacturer is not always prepared to give "off-hand." The following sent us by one of our readers might well be filed away to turn to for reference:

"First—The tile should, if possible, be laid at least 24 inches below the surface of the ground so as to avoid the action of frost.

"Second—The bottom of the ditches should be of a smooth uniform surface and grade.

"Third—Avoid sharp angles in the ditches, as they obstruct the flow of the water.

"Fourth—Begin laying at the head, or the highest point, and close the end of the head tile with any convenient durable substance; large stones are frequently used, so as to prevent any foreign matter from filling up the drain.

"Fifth—Place the ends of the tile together carefully, so that the interior surfaces may form a continuous line. Do not use any cement, or a like substance, for making the joints. When necessary cover the joints with pieces of phosphate bags, burlap, or any like material, cut in strips and laid directly across the joints, so that the surface water can percolate down through the soil to be absorbed and carried off by the tile.

"Sixth—The end, or outlet of the tile, should have several good size holes drilled through it from the top to the bottom and a coarse wire inserted through these holes, so as to prevent rats, mice and snakes from going into the drain, at the same time placing some stones over the end to prevent the earth from caving in and impeding the drain. In very swampy soils and quick sands, or lands of a treacherous nature, it will be necessary to place the tile on planks, or to use a loose collar, to form the joints, to prevent the tile from being displaced.

"If these suggestions are carried out carefully the tile will do the necessary work and the results obtained will be wonderful. This has been proven by those who have reclaimed their marshes and lowlands by using this agricultural drain tile, the expense of which is comparatively small compared with the great yield of the crops."

CLAY VS. CEMENT SEWER PIPE.

The Clay Products Publicity Bureau, Kansas City, Mo., call attention to the disappointing results, so far as promised saving in money was concerned, by the substitution of cement for clay pipes on certain work in that city.

"On 20 sewer contracts executed in Kansas City the city engineer gives \$196,602 as the total cost; \$37,508 of this was for sewer pipe—19 per cent. The promised saving of 20 per cent on the pipe item offered by prospective concrete pipe manufacturers amounts then but to 3.8 per cent of the total tax bill. At the engineer's estimate of 23¼ cents a front foot each taxpayer having a 25-foot lot would save just 69½ cents."

This calculation shows how little, in many instances, the cost of the material purchased figures in the total value of the improvement.

TILE BUSINESS GOOD IN TEXAS.

Owing to irrigation projects in Texas and also on account of the reclamation work going on throughout the entire South, there is considerable demand for drain tile in that section of the country.

Heretofore, there has been some doubt as to the possibility of making good tile from the clay found in Texas. However, in the past few years experiments have proven the fallacy of this belief. Mr. E. E. Baudisch, of the Baudisch Drain Tile Co., of Brownsville, Texas, has succeeded in making excellent tile and has the following to say concerning the tile business in Texas:

"The tile business is very good here, although some practical clay men told me that I could not make tile satisfactorily from this clay here, but in spite of all the obstacles put in my way, I have succeeded in making a first-class tile and cannot make enough to supply the demand. I had the honor of being the first man to make tile in the entire Rio Grande Valley, and some of those who discouraged the experiment and refused me financial help to experiment with the clay here, are now anxious to come into the deal, but we do not need them now."

EXTENSIVE DRAINAGE PROJECT.

An extended drainage project in Northern Minnesota is being carried out under the supervision of W. R. Hoag, engineer, of Minneapolis. When completed, it will reclaim 650,000 acres of land in Northwestern Minnesota.

This project will open up an area of about 1,000 square miles, and will cost about \$1,000,000 for ditches and highways. During the first twenty days of July, twenty miles of roads were built and 175,000 yards of dirt were handled. The contract includes 497 miles of ditches and highways. Thief river is to be enlarged from its source at Thief lake to its junction with Red Lake river, at a cost of \$125,000.

CONCRETE SILO EXPLODES.

A concrete silo containing \$1,500 worth of corn and fodder belonging to Harold E. Roberston, near Sonora, Ohio, was wrecked recently when an explosion due to fermentation of the fodder occurred. The explosion was so great that huge slabs of concrete were blown a distance of 100 feet.

Still people will continue to use this treacherous material when the silo built of hollow clay block has proven eminently satisfactory.

DRAIN TILE NOTE.

The tile plant at Winnebago, Minn., will soon be equipped with machinery which will thoroughly crush and pulverize the limestone which is found in their clay beds. This company has been experiencing much the same trouble as that of the Fairmont plant in regard to the limestone proposition, there being, however, less of the stone at this point than in the Fairmont clays. The result of the test of the new machinery will be watched with a great deal of interest.



GENERAL POTTERY NEWS.

Now that the executive committee of the United States Potters' Association has agreed to have its annual meeting at Washington, D. C., December 5, interest is being centered in the election of a president of the organization. John Pope, of Trenton, has been suggested as a likely candidate from the east, while another possibility is Harry D. Wintringer, president of the Steubenville (O.) Pottery Co., and Hal N. Harker of the Harker Pottery Co., and Will L. Smith of the Taylor, Smith & Taylor Pottery Co., of East Liverpool, are also mentioned in this connection. The meeting will very likely be held in the Hotel Raleigh, and will begin at 10 o'clock the morning of December 5.

Foreign pottery manufacturers are being interested in American machinery and methods of manufacturing pottery, and with this end in view, the report is current in the East Liverpool pottery district that a number of foreign manufacturers contemplate trips to this country at an early date. A. G. Johnson, a member of the firm of Johnson Brothers, of England, recently spent nearly a week in the East Liverpool district inspecting new patented sagger making machines, scouring and dipping machines, and new methods of speedy decorating appliances. These inventions were revelations to the foreign manufacturer, and he announced his intention of making purchases of some of these appliances ere the end of the year.

In the potteries at Sebring, O., are new decorating machines, which are the speediest of the character ever installed. They are labor saving devices, and at the same time almost more than double the output of flat decorated ware. The foreign manufacturers are very much interested in this method of decorating, and similar machines are to be installed in a number of English potteries.

Plans are maturing for the erection of a new art ware pottery in the Wheeling, W. Va., district, it being said that Eastern men will build this plant on a site recently acquired in a town about 40 miles south of Wheeling on the Ohio River. The new company will manufacture jardinières, pedestals, and art ware specialties, but will not go into the whiteware business. Names of those interested are being withheld for the present, although two of the men are said to be from New York City.

More than ordinary interest has been shown by the western pottery manufacturers over the successful experiments of Thomas W. Stephen of Trenton, N. J., in reducing the cost of manufacturing ware by giving it only one fire, and at the same time creating a glaze which is now only obtained by a two-fire process, outside of electric porcelain wares. A similar experiment was tried some time ago by the Hall China Co. of East Liverpool.

Considerable interest is being shown in the action of the Wheeling (W. Va.) Board of Trade in its effort to secure the re-opening of the plant of the LaBelle Pottery in Wheeling, which was formerly operated under the management of the Wheeling Potteries Co. There is reason for believing that if the prices of domestic pottery were a little better, and if the pottery manufacturers would "hang" together a little closer, there would be little difficulty in re-opening this idle plant, which is very well equipped.

Great progress is being made by the Warwick China Co., of Wheeling, W. Va., in the manufacturing of vitreous hotel china and vitreous china dinner ware. This concern is the first in the West that has undertaken the making of such a product, and in the past these lines have been confined to the Trenton, N. J., district. However, early efforts at the Warwick have proven very successful, with the result that the plant is working to the limit of capacity on the new bodies and glazes.

Efforts will be undertaken, at no distant date, to locate a pottery in the vicinity of Mobile, Alabama. Recent discoveries of vast clay beds in that locality have prompted this effort upon the part of Mobile financial men. There are no domestic potteries in the South, and claim is made that the first in the field will prove a financial success.

A charter has been granted to the Bohemian Art Pottery Co., of DuBois, Pa., which was recently formed by Lewis H. Fischel of DuBois. The company will go in for the manufacture of art pottery under a new method, which has recently been perfected.

Using native New Jersey clay and placing new glazes upon it has created a new industry at Flemington, N. J., where the Fulper Art Pottery Co., is doing business. This concern is making a feature of portables and electroliers, the standards and shades being made of native clay, but the new glazes add the necessary artistic effect to the product. This plant is operating full time and to capacity, especially in high class art ware.

Construction has been started on the large addition being erected to the John G. Burley Pottery at Crooksville, O. The plant will occupy a site 150 by 225 feet, and is expected to be completed within six weeks.

The Clark pottery at Crooksville is being enlarged, an addition occupying a site of 110 by 50 feet being secured. General Manager William Clark has announced that the remodeled plant will be ready for operation ere another month passes.

Announcement has been made that the capital stock of the Wabash Pottery Co., at Roseville, O., has been increased from \$10,000 to \$15,000. This means that improvements to the plant will soon follow.

There is every indication that the domestic pottery manufacturers will experience a busy fall, although buyers have been rather slow in anticipating their wants so far. The trouble is that many buyers hold off until the last minute to order stocks, and then expect shipments to be made immediately.

O. H. Arhendts, president of the Consolidated Supply Co., is at the head of a company which has been organized in East Liverpool with a capital stock of \$10,000, for the purpose of building a recently invented decorated machine. By this new plan, it is claimed that gold stamped and other single colored decorated ware can be decorated 100 per cent faster than by the present hand method. A meeting of the stockholders of the new company will be held in East Liverpool soon, when the details of organization will be completed and plans for placing the new machine on the market will be given first consideration.

Rebuilding of the burned plant of the Universal Sanitary Pottery Co., at New Castle, Pa., is progressing rapidly, and it is thought operations will be resumed within two months.

A DOUBLE ORDER BOOKED.

An order of unusual dimensions has just been booked by The C. W. Raymond Co., of Dayton, O., from Montreal, Can., consisting of two of their largest sized outfits of brick-making machinery, consisting of 2 Raymond 999 special brick machines, 2 14-ft. heavy-duty pug mills and 2 No. 1 automatic cutting tables, having a combined capacity of 400,000 brick per day. This machinery, with that which the Canadian company already has in operation, it is said, will give them by far the greatest output of any brick plant in the world. The Dayton company has but recently opened a Canadian branch office, and this order is the result of work done by their hustling representative, Frank A. Elliott.

"UNLOADS IN ONE MINUTE."

The need for a wagon specially built for the trying service of brick delivery was long felt in the trade, and the Auburn Wagon Co., Martinsburg, W. Va., should have the thanks of the industry for producing a vehicle just suited to the needs of the brick manufacturers and dealers. The Martinsburg brick wagon is used by a



Martinsburg Wagon in Act of Dumping Load of Brick.

large number of brick manufacturers and dealers throughout the country, and in every case is giving the best of service. It is not only a good advertisement in itself, but it helps to increase sales because it gives delivery service which pleases the building contractor.

Its particular features are its strength and durability, the ease with which it is handled under difficult conditions, and particularly the quickness with which it can be dumped.

The illustration shows one of these wagons in process of dumping a load of 1,000 brick. One of the claims of the manufacturers is that the wagon can be "loaded in ten minutes, unloaded in one, and never chips a brick."

ADVANTAGES OF OIL-BURNING.

We are in receipt of a pamphlet, recently issued by the Tate, Jones & Co., Pittsburg, Pa., relative to fuel oil and appliances for burning clay products. Various illustrations, tables and drawings are shown giving comparisons between oil and coal burning and cost of each.

With the cost of handling, storing and removing ashes and various other fixed costs when coal and wood are used for burning, the advantages of oil as a fuel are readily seen.

Another feature of advantage in using oil is that water-smoking can be accomplished in much quicker time and the impurities are absorbed by the steam passing from the brick more rapidly than when coal is used, and it is said that up to date no clays have been found that could not be burned directly under the steam. This cannot be accomplished with coal, as the kiln would "soot up" if crowded.

NEW CATALOG.

C. O. Bartlett & Snow Co., engineers and manufacturers of elevating and conveying machinery and direct and steam heat dryers, Cleveland, Ohio, have recently issued catalog No. 32 which describes their "Triumph Drop Forged Chains." This catalog has been prepared with a special view of making it useful to engineers so that they may have definite information in regard to materials used and the elements of application in the types of chains shown. Various illustrations appear, showing the adaptability of these chains to the hoisting of clay and coal at the clay plant. Copies of this catalog may be had by applying to the C. O. Bartlett & Snow Co., Cleveland, Ohio.

MISSISSIPPI PLANT BURNS.

The plant of the Laurel Brick & Tile Co., at Laurel, Miss., was burned on October 20th. The insurance amounts to about \$18,000, while the loss is said to amount to \$25,000.

The fire originated in the roof of the main machinery room from an unknown cause, and spread to the dry kiln and boiler house and nothing escaped the flames except the office building and three kilns. The plant was being operated by the Schneider brothers, who for many years have operated the St. Jo Brick Works, near Slidell, La. Both B. A. Schneider and M. P. Schneider are well known in the brick business in south-east Mississippi and Louisiana. They had only recently assumed the management of the plant, which had heretofore been owned and operated by the Gulf States Investment Co. of New Orleans, La.

WILL DEVELOP CLAY DEPOSIT.

Victor Zuber, a Portland contractor, John Perry, Leo Schuner, Anson Crutchfield and C. Schnurr, all practical brickmakers, have incorporated the Bandon (Ore.) Clay Product Co. with a capitalization of \$25,000.

NEW REPRESENTATIVE.

In making several changes in their traveling force the C. W. Raymond Co., have been fortunate in securing the services of Mr. R. L. Dennison, more familiarly known as "Bob" Dennison, Kansas City, Mo., to handle their business in that territory and the gas belt. Mr. Dennison is probably better acquainted with the brick makers of the gas belt than any other one man of that section of the country, having lived and traveled there all his life and having been interested in several large, successful plants. Mr. Dennison has already taken charge of the work and his office is 539 Ridge Bldg., Kansas City, Mo.

Our acquaintanceship with Mr. Dennison shows him to be a gentleman in every respect, a man of great ability, with a thorough knowledge of the brick industry and we predict for him a very successful business.



Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers— Market Fluctuations and Industrial Prospects

PACIFIC COAST NEWS.

San Francisco, Nov. 10.—As indicated by the record of building permits issued last month, the amount of new work started here was somewhat less than for the month preceding, but the decrease has not been felt in the brick market. In fact, dealers in building materials are rather busier than they were a month or two ago. As compared with last year, the official records show a material improvement. Beginning with August, 1910, the volume of work steadily decreased to the close of the year, while this season there is every reason to expect an increase. The result of the municipal election has been highly satisfactory to financial and industrial interests, and investors have more confidence in putting their money into buildings in San Francisco, than for several years past.

The breaking of ground for the Panama-Pacific Exposition by President Taft was made a matter of general celebration. While work on the exposition buildings can scarcely be begun before the first of the year, the architectural council is making rapid progress on the plans, and the preparation of the ground will soon be started on a large scale. The prospect of this event has been a great stimulus to private building, particularly in the line of hotels and apartments, which for the most part are being built of permanent materials.

The great bulk of the work now coming out, in this city, is of a small character, but several contracts have recently been let for brick buildings of large size. One fairly important job is the medical library of Stanford University, on Sacramento street near Webster. The Standard Oil Co. has let contracts for the foundation of a large office building, and will soon have the plans completed for the superstructure, in which brick and terra cotta will probably be the principal materials. Another large contract recently let was for the German House Association's building.

The common brick market remains in a healthy condition, the price being steadily held at \$7.00 per M. In this line, the outlook is better than for several years at this particular season. A year ago, prices were badly depressed, building was slow, and heavy accumulations, both at the kilns and at local distributing yards, made it necessary to sell considerable brick at or below the cost of production. This year, while fair stocks are carried at most of the yards in town, the accumulation is little larger than is necessary to take care of current demands, and the kilns are keeping their output pretty closely cleaned up. If building operations increase, or even keep up at the present scale, it seems very unlikely that there will be any undue surplus at the end of the year, and even if some brick should be left over it can probably be moved off to good advantage in the spring.

The United Materials Co., representing the Los Angeles Pressed Brick Co. in San Francisco and vicinity, reports that its "ruffled" brick, made at the Richmond plant, has been specified for the new St. Paul's Episcopal Church in Oakland, which will require about 350,000 brick. This company is also furnishing the pressed brick for the Terminal Hotel on Market street near the waterfront, and for the new Rudgear Hotel.

Brick of the "ruffled" or "tapestry" type is gaining considerable popularity in this locality, several churches and other large buildings faced with it being objects of much favorable attention. This material is also largely used for mantels.

Pending the adjustment of insurance, nothing has so far been done toward the rebuilding of the Los Angeles Pressed Brick Co.'s paving brick plant.

C. F. Pratt, manager of the Golden Gate Brick Co., and his brother, L. H., are gaining quite a reputation as chefs. A few weeks ago they entertained the local Architectural Club at a bull's head breakfast at the plant at Antioch, Cal., and

last Sunday they served up five bulls' heads and a dozen chickens to a crowd of Masons. The young architects who attended the first affair had a most enjoyable outing, making the trip on the river on the night boat, and holding an impromptu field-day the following day after looking over the plant.

The Silica Brick Co. of Sacramento, Cal., has levied an assessment of 40 cts. per share on its capital stock, delinquent Oct. 30, and the Stockton, Cal., Fire & Enamel Brick Co. has levied an assessment of 30 cents per share.

S. W. Winsor, a well known pottery man of Oakland, has brought suit against the Silica Brick Co. for the return of 400 shares of preferred stock in that company, which he says he placed in the company's hands for safe keeping, and which it has since refused to surrender.

Farrell & Reed, bricklaying contractors of this city, have taken the contract for the brick and terra cotta work on the new St. Luke's Hospital building, at a price of \$55,500. Another job of some interest is that of tiling for floors and walls of the new San Francisco Hospital. When bids were opened this week, it was found that the lowest, that of Lowry & Baly, was \$52,000. This was \$12,000 above the architect's estimate, and new figures will probably be called for.

The Carquinez Brick & Tile Co. has made a contract with the Great Western Power Co. to furnish electric power for its large plant at Eckley, near Port Costa, Cal., and the power company is rushing work on the extension of its line to the plant.

An important mortgage was foreclosed by default recently in a Los Angeles court, the case being that of the Metropolitan Bank & Trust Co. against the Douglas Clay Product Co. and the Pacific Sewer Pipe Co. Prior to May, 1906, the Douglas Company created a bonded indebtedness of \$100,000. The debt fell due May 1, 1911, and the company was unable to take up its bonds. The money borrowed was used to erect a plant which is now in operation.

The convict-operated brick plant at the Oregon state penitentiary at Salem, Ore., has been shut down on account of the rainy season. The governor announces that no more brick will be sold on the open market.

It is reported that Murphy, Hilton & Pettis of Salem, Ore., will establish a tile factory at Albany, Ore.

The Denny-Renton Clay & Coal Co., one of the largest brick manufacturers of the north coast district, announces that its terra cotta factory at Renton, Wash., will be materially extended in the immediate future, the present plant being hardly adequate to handle the growing business.

Work is now progressing on the projected brick plant of J. A. Benson and J. Burness at the new town site of Rannels, in the Imperial Valley. As soon as the plant begins regular production a number of substantial buildings are to be erected.

The Coalinga Brick & Tile Co., which has two kilns near Coalinga, in the California oil fields, resumed work late last month, after being closed for the installation of new machinery.

The Livermore Fire Brick Co. has had some difficulty of late in getting a superintendent for its plant at Livermore, Cal. The head engineer had charge of the plant for a time, but it was recently announced that James Norton, formerly in charge of the large Carnegie plant which closed down some time ago, had taken the position of superintendent with the Livermore Company. The company is busy on a number of improvements, and expects to turn out a much greater variety of products than in the past.

Operations have been considerably curtailed at the plant of the Remillard Brick Co. at Pleasanton, Cal., and it will probably be closed for the season before the end of the month.

This plant is now operated by electricity, the change in motive power having been made last spring.

We have been advised that Edward Gray Taylor, an architect of Los Angeles, Calif., is preparing plans for the proposed plant of the Los Angeles China Manufacturing Co. The plant will be erected at Domingues, Calif. The company has an authorized capital stock of \$300,000 and without doubt will erect a plant which will be a model one for china manufacturing.

THE MIDDLE STATES.

An Iowa newspaper states that the switch to the new pottery works at What Cheer, Ia., will be put in shortly and that forty workmen will be put to work erecting the new building and kilns. The plant, it is said, will cost about one-quarter of a million dollars.

Robt. Maroney, an employee at the McKissick brick plant, at Carlisle, Ia., was instantly killed on October 31st, by a freight train. It is thought that he stepped between the cars while the train was at a standstill and was knocked off his feet by the sudden starting of the train. His head was crushed beyond recognition.

Goodwin Bros., at Minonk, Ill., have finished burning their last kiln of tile for the season. This company reports the past year has been one of the most prosperous in its history. They manufactured over a million brick and about 600,000 tile varying in size from 3½ to 12 inches.

DOWN IN NEW ENGLAND.

Boston, Mass., Nov. 12.—New business is of fair proportion and deliveries on old orders account for a large quantity of brick. Clay manufacturers think, judging from what has already been accomplished, that last month will prove one upon which they will be able to look with quite a moderate degree of satisfaction.

Reports from New Britain, Conn., are that the several brick yards in the vicinity are all working steadily and that it is planned that they will continue to operate up until Christmas-time if the weather permits. Some of the yards where modern machinery has been installed, will continue to operate plants all winter.

The New England Steam Brick Co., at Barrington Centre, R. I., has resumed the shipping of brick, a settlement having been agreed upon with the employees who placed attachments on the property for wages alleged to be due. Mr. F. Marsden is superintendent of the plant.

The new swimming pool at the Y. M. C. A. at Taunton, Mass., is lined with white enameled brick, as are also the new lavatories and improved shower baths. Enameled brick seems to be the proper and fitting material for the lining of public bath rooms, swimming pools, etc.

We understand that the Morris County (N. J.) Brick Co.'s property, located near Whippany, has been sold for \$5,000 to a Boonton bank.

A fire at the plant of the Stiles & Reynolds Co., Berlin, Conn., on October 31st caused a damage estimated at several thousands of dollars. The fire is believed to have been caused by defective wiring. The engine house containing a valuable dynamo which furnished power for running the plant was ruined.

Thomas Lacey, general manager and treasurer of the New England Brick Co. with headquarters at Boston, has recently adopted the plan of burning brick with bird's-eye coal instead of cordwood.

The Stiles & Son Brick Co., of North Haven (Conn.), has purchased forty-six acres of standing timber from which wood will be cut for use in burning brick at their plant.

THE SOUTH AND SOUTHWEST.

Arkansas.

Recent investigations conducted by the United States Geological Survey in Arkansas, reveal the fact that the clays of Arkansas cover a vast area and are of a great variety. These clays have been proven to be adaptable to the manufacture of all clay products from the finest and most delicate china to the cheapest brick, unlimited fuel for burning being found close at hand. Notable

among the points where potter's clay is found, are Walnut Ridge, Beebe, Russellville, Benton, Malvern, Hope and Texarkana.

Mississippi.

Brick manufacturers at Jackson, Miss., are complaining somewhat on account of the low prices received for brick. Some time ago a little brick war was on in this territory and the Jackson manufacturers showed what they could do in the way of competition. As a consequence the price became so low there was scarcely any profit left for the manufacturer.

The W. B. Taylor brick yard at North Jackson, Miss., has a capacity of 35,000 per day and has more orders on its books than can be filled immediately. The company is contemplating the purchase of adjoining lands in order to obtain a supply of clay sufficient for its needs.

Kansas.

The Standard Vitrified Brick Co., of Coffeyville, Kans., is making preparations to furnish its own gas supply. A right-of-way will be secured for a pipe line to extend from the company's plant to a new gas field just across the Oklahoma line southwest of Coffeyville.

The Chanute (Kans.) Brick & Tile Co. recently brought suit against the gas company for an alleged breach of contract in shutting off the supply of gas which is being furnished the tile company. The plaintiff alleges that for some reason unknown to itself, the defendant one Sunday morning shut off its gas and that it remained shut off for some time. Meanwhile the plaintiff constructed a pipeline reaching the Coffeyville Brick Company's mains and secured a supply of gas from them. Then the defendant, it is alleged, again turned on its gas. The plaintiff asks to be awarded \$100 per day for the period during which the defendant withheld the gas.

Nebraska.

The management of the Table Rock Clay & Brick Co. are much pleased with their recent sales. They have shipped consignments to Pawnee, Lincoln and Hickman, and are also furnishing brick for construction of a round house.

Texas.

We are told that the brick plant at El Campo, Tex., is now under construction and is being pushed to completion. Dr. W. E. Chandler is head of the concern and Frank Merideth, a brick man of considerable experience, is superintending the plant.

Proof of final payment of capital stock has been filed by the Lexington Brick & Tile Co., of Lexington, Texas.

The Dallas (Tex.) Brick & Tile Co. has recently installed a fine "stiff-mud" tile machine with a capacity of 10,000 a day.

Georgia.

Reports from Columbus, Ga., show that exceptionally heavy shipments of brick have been made from that point to south and south-west Georgia and also to Florida. During the past few weeks the railroads have been kept busy with shipments of brick. It is said that owing to favorable shipping conditions, the brick manufacturers at Columbus are able to under-sell their competitors at least a dollar a thousand, f. o. b. Columbus.

Missouri.

A. P. Green, head of the Mexico (Mo.) Brick & Fire Clay Co., has re-leased the land on which his brick plant is situated, for fifty years and will erect a three-story building for new machinery and dry pans. The old tracks will be torn up and new railroad yards, double the present capacity, will be constructed.

We understand that John J. Rabaczewski, of Detroit, Mich., is negotiating with the Joplin, (Mo.) Commercial Club with a view of establishing a brick plant at Joplin.

California.

State Mineralogist Aubrey states that while California gold has had its share of exploitation, the commercial minerals of the state have been much overlooked. He expects to turn his attention to this department and he says: "Magnesite brick at present are brought from England, yet we have as fine magnesite in this state as can be found anywhere."

GENERAL NEWS NOTES.

We have been advised that Beck, Hockman & Warner Co., Waynesboro, Pa., will at once begin the construction of a plant for the manufacture of common brick. Wm. Johnson, of Fairfield, Pa., has been engaged as manager and superintendent of the plant, which we understand will be equipped for manufacturing brick on an extensive scale.

We understand that W. G. Bush & Co., 174 N. 3rd St., Nashville, Tenn., contemplates increasing the capacity of its plant.

A certificate of dissolution has been filed by the Winfield Pottery & Fire Brick Co., of Winfield, Texas.

The Malvern Fire Clay Co. has been organized at Malvern, Ohio, for the manufacture of fire clay products. The authorized capital is \$100,000, divided into \$60,000 preferred and \$40,000 common stock. The incorporators are: Edmund C. Baxter and Oscar Allison, of Chester, W. Va.; Geo. W. Henning, of Canton, O.; Walter R. Elson, of Massillon, O., and Harwood C. Ross, of Malvern, O.

Th New Brick Co., with offices in the town of Stillwater, N. Y., has filed articles of incorporation for the right to deal in brick, stone and building materials. The company is capitalized at \$100,000 and the directors are: William H. Duffney, Fred E. Welling, William D. Tweedy, Norman W. Keise, Herbert O. Bailey, and Thomas F. Hickey, of Mechanicsville. We are told that this company has taken over the plant formerly owned by the Mechanicsville S. S. Brick Co., at Mechanicsville, N. Y.

We are informed that the Reading Quarry Co. has erected a new brick plant at Laurel Dale, Pa.

The Swiger Brick Co. contemplates the erection of a one-story brick plant, 297x407 ft., at Fairmont, W. Va., at a cost of \$30,000.

Mr. J. R. Nicholls has sold his brick plant between Greenwood and New Market, S. C., to W. J. Millsap, of Clarendon County, and J. A. McDougal, of Camden, who will continue the business at the plant.

The Reliance Brick Co. has been chartered to manufacture, export and import all kinds of brick, stone and building material. The incorporators are J. Vaughan Bostwick, of Roxborough, Pa.; Barlow Moorehead and Thomas B. Harned, Jr., of Philadelphia. The company is capitalized at \$250,000.00.

ACROSS THE LINE IN CANADA.

It is stated that the season's building total at Regina, Sask., will reach \$5,000,000. Last year the total was \$2,351,238. The larger items in the present year's totals are an office building at \$110,000; a college at \$275,000; a publishing building at \$150,000; a railroad station at \$180,000 and a city pumping house and filter plant at \$100,000.

It is stated that the Brick & Tile Co., of Cloverdale, B. C., has found its clay deposit eminently satisfactory and the demand for its brick and tile has been such that the company is planning an extension of its works.

The Port Credit Brick Co., of Toronto, is installing additional brickmaking machinery and electrical apparatus which will enable them to manufacture brick on a much larger scale. Their plant at Port Credit, Ont., is considered one of the most up-to-date on the North American Continent.

THE TWIN CITIES AND THE NORTHWEST.

Minneapolis, Minn., Nov. 12.—After having a rather slow and dull season in the brick market, there has been a slight revival in business in the past few weeks, and business is reported better than it has been for some time past. Just how to account for this change is difficult, for there is no marked change in the building volume, and what change exists there is in the direction of a smaller volume. The prolonged rainy period of the last three months has been such that building generally has fallen off, having been held down because of the bad weather.

There has been a revival of interest shown in drain tile, since wet weather has become a possibility again. During the year and a half of dry weather, the farmers of the Northwest found no need of tiling to drain their

lowlands, and many of them concluded that tiling was a useless extravagance under all circumstances. But this fall the low prices have begun to fill up and they find that because there was one long dry period it does not follow that there will never be another "wet spell."

Drew H. Lord, a prominent general contractor of Northfield, Minn., died at his home in that city a short time ago, of chronic heart trouble. Mr. Lord was the contractor who built a number of the prominent buildings at Northfield, which include a number of very attractive brick structures.

There is a general campaign on in Minnesota regarding the safety of motion picture establishments, which have sprung up so freely in all the cities and towns. In Minneapolis the city ordinance is to be remodeled and changed to make greater restrictions approaching fire-proof construction as much as possible.

Phil A. Anfang, superintendent of construction for the State Board of Control in Minnesota, died recently at his home in St. Paul. Mr. Anfang superintended the erection of a number of elaborate brick structures at various state institutions.

W. Siwart, secretary of the Twin City Brick Co., St. Paul, is now enjoying a tour in Europe, to be gone until the holidays.

It looks as though the Fairmont Drain Tile & Brick Co., of Fairmont, Minn., would be able to operate its plant to a satisfactory end. Options were secured on several tracts of good clay lands within a short distance of Fairmont, and these clays were tested carefully. Then to make sure, several good-sized lots of the clay were brought to the plant and were put through the work, thus being given a practical trial with the same equipment that will be used in the regular operation of the plant. The first test load was received during very rainy weather and the clay was drenched and received a surplus of moisture. Nevertheless, the product gave good hope while subsequent tests proved better. The matter of leasing one of these tracts and shipping in clay to the plant will be formally passed upon by the stockholders before any positive action is taken. The prospects are that such a lease will be made and the plant will be soon operated.

There is some talk among brick men of the Twin Cities that prices should be advanced as the demand is increasing and stocks are none too large to meet the probable needs of the winter and spring. Of course, there can be no concerted action on such a matter, but if enough manufacturers reach that conclusion and start advancing, it would not take long until the price generally was up.

Building permits issued in Minneapolis for the month of October were less than for the corresponding period of a year ago, being \$718,815 against \$1,157,275 for the month in 1910.

Mr. Keeler, secretary of the Mason City Brick & Tile Co., Mason City, Iowa, was a visitor in the Twin Cities during October. J. P. McLean, of Menomonie, Wis., was also a caller on the trade in the Twin Cities.

Mr. Nixon, of Paine & Nixon, brick and material dealers of Duluth, was in the Twin Cities recently on business.

Building permits in St. Paul did not hold up for October, as compared with the figures for a year ago. The past month had \$571,482 against \$877,003 for October in 1910.

The Northwestern Clay Association officials are considering the approach of the convention season, and are now planning a quarterly meeting to be held this month, at which time the annual meeting in December will be taken up. No plans have been outlined as to what will be considered at the annual meeting, aside from the expectation of covering a very strong program, so that it will be worth the while of every brickmaker in the Northwest to attend.

We have been informed that the plant of the Hollandale (Wis.) Brick & Tile Co. has been exchanged for a tract of land in Minnesota formerly owned by the Northern Minnesota Dairy Farm Land Co., Madison, Wis. The deal involves about \$100,000.

The Northern Brick & Supply Co., of St. Paul, have opened an office and display room at 635 Plymouth building,

Minneapolis. They carry a full line of brick, both in rough and smooth brick; also glaze and enamel, oriental and Moquette rough brick, and architectural terra cotta.

A fire at the brick yard of the Butte (Mont.) Sewer Pipe & Tile Co., on October 16th, caused considerable damage amounting to about \$2,000, partly covered by insurance. The fire is believed to have been caused by spontaneous combustion in the coal bins. Fortunately the wind carried it away from the main plant which consists of ten buildings.

Members of the Portland Realty Board and the Portland Architects' Club to the number of 150 were conveyed by special train, recently, to the plant of the Newberg Brick & Tile Co. at Newberg, Ore., where they were shown through the plant and entertained by the brick company.

The Zumbrota Tile & Brick Co., of Zumbrota, Minn., have ordered 1,000 3x7-foot double-deck brick cars for use at their new plant.

W. T. Houlahan, of the Builders' Brick Co., Seattle, Wash., is furnishing the plans for the construction of a continuous kiln and a 100-ft. stack at the plant of the Granger Brick & Tile Co., Granger, Wash., but is not otherwise interested in the company as might have been inferred from an item previously published in our Trade Review.

A visit to the brickyard of the Gold Bros. Brick Co. at Big Stone, S. D., revealed to us some fine improvements that are going forward at that busy place. The new machine shop is about completed and the power house has been practically rebuilt. The new kilns have been roofed in so as to make shelter for fuel and workers between them and a large amount of rearrangement has placed the yard in shape to make better brick in 1912 than ever before and more of them.

KANSAS CITY NEWS.

Work is progressing on the foundations of the new Union Station, and by the coming summer there ought to be a good sized area of building in that neighborhood, as any number of buildings will be needed for the new business center the depot will create, and there are but few of the buildings already in that section which can be converted to the new uses. Builders expect many contracts to be let in that section early in the spring, regardless of the condition of the country in general so far as the coming election may affect it.

There has never been a time in the past year when plenty of workmen could not be secured here, and the only thing to change this condition would be the opening up of a great deal of work at some other point. Many workmen are already looking toward San Francisco, and say that the beginning of work in that city for the Panama exposition buildings will make a big demand for workmen at big wages. If this demand develops there will probably be no surplus of labor here, as Kansas City is close enough to San Francisco to be easily affected by such a demand.

So far as business conditions in this section are concerned, there seems to be plenty of grain moving from the country, and the crops are said to be about up to the average. Prices are holding high, and there should be a good demand for brick from the country lumber yards for the balance of this year, as this is the season when most of the building is done on the farms, after the regular line of work is over.

A good deal of complaint has been made of late because the Kansas brick yards have been quoting circular prices to contractors in this city. These circulars have resulted in fixing the market at a very low level, but have not resulted in making many sales for those who send them out, as but few contractors are in shape to buy brick on board cars in large lots and deliver them to the jobs. They look upon that as something outside of their business, and as a result they turn to the local jobber for the goods, but turn with the circular prices in their hand for the local jobber to meet in some manner. The direct result of this circularizing has been to start the local jobber out in the same direction, only he is going after business in neighboring cities, and is of course cutting in on the business that the factories could do there at more profitable figures than are ordinarily secured here. The net result is the same number of

brick sold by the manufacturers and a lower price secured all around.

In speaking of the prospects for business the coming year one of our manufacturers said: "If we do not have a good business in all lines in this section of the country next year it is our own fault. There is absolutely nothing about a presidential election that ought to affect us in this great grain-producing and stock-producing section of the country. If we were dependent upon the factories for absolutely everything we would have every right to feel as they do in the factory cities of the east, but we are primarily an agricultural community, and as long as the crops are up to the average we should be able to go ahead and do a normal business. Our big factories are packing houses, and they do an export business, so they should be able to go right ahead with their business, no matter what is done with the tariff, and there should be no reason for their shutting down to wait to see what is in prospect in the way of a change, as is the case with most other lines of manufacture."

Robert Nesch, president of the Pittsburg Brick Co., reports having established several new down-draft kilns at their plant, and says that they are having a good demand for their pavers, and are placing them on the streets of several western cities where other paving was placed only a few years ago which has proved of little value.

The Kansas City Hydraulic Press-Brick Co. continues to operate its Diamond plant in this city, but is able to keep up with the demand without operating any of its other plants.

The Lyle Brick Co. is having a good demand for its brick, and will probably continue to operate right along for a considerable time yet.

Flanagan Bros. are managing to keep their plant fairly busy by making use of a large part of the product through their own construction company.

Quite a number of the Kansas plants have closed down indefinitely on account of the low price of common brick. Some are taking advantage of the occasion to change from gas to oil as a fuel, feeling that it is by far the most dependable fuel.

NORTH CAROLINA.

We have been informed that the Johnson & Johnson Co. of Raleigh, N. C., are planning to install an additional dryer, which when completed, will give the plant a capacity of 60,000 common brick per day. This company is capitalized at \$50,000 and employs 40 men continuously. The Raymond radiated heat dryer is giving the company satisfactory service, coal being the fuel used.

It is reported by the manager of the brick plant at Clarks, N. C., that they were obliged to suspend operations at their plant on account of scarcity of labor. The cotton fields are also suffering from lack of laborers there.

THE WINDY CITY.

Chicago, Ill., Nov. 11.—There appears to be but one contingency to insure a prolonged activity in the brick and clay lines in and about the "Windy City," and as might be expected, this is the weather. If the present month continues favorable, there will be a fair chance for some of the manufacturers and dealers to catch up a trifle with the losses made during the earlier season. The work is being rushed to as early a completion as possible, and while there are not many plans being made and many new contracts let for structures, the percentage is fairly large, and the amount of materials being demanded likewise very fair.

Brick are moving along in a very good way. Conditions are not overly brisk, nor as promising as they could be, but on the whole, there is small chance for complaint. The yards are fairly well loaded with brick, and are operating about as usual, with the indications favorable for a continuation of the same for some time in the future. While it might be that there will be a large quantity carried over for the spring demand, it is not probable that the amount in this instance will be in excess of other years. Should the demand for common brick hold up well for the rest of the present year there will be no very considerable supply left on the yards, even though the yards are kept in pretty active operation for the greater part of the winter.

The brick men appear to feel well satisfied over the sit-

tion. Realizing that there has been a decrease in the demand, caused by the several unpleasant things transpiring this year, there is a feeling of contentment, and a hope for a better trend with the arrival of a new year. If a careful survey were to be made of the whole situation this year, no one could justly complain about the demand.

One finds a smile on the faces of the face brick men these days. They have been philosophical through all the struggle, and they are now experiencing the good that comes "to those who wait." They have made the best of the situation and feel that, if the weather continues good, there will be little cause to complain, though they have had a rather awkward season all around.

Active building, on double quick time, on a number of the larger structures is quite a feature now. As the winter draws nearer, there are renewed efforts to make the most of the remaining favorable days, there being a notable effort to at least get the structures under roof. The percentage of clay product materials used in these new buildings is very much greater than all other materials combined, which speaks in eloquent terms for the clay men in this city.

This will be the best possible recommendation for the exhibitors at the coming convention and clay show. It will make proof more positive that here in this world-renowned city by the lake, the people value highly the use of burned clay products.

Conduit, fireproofing, flue linings and coping lines are in fair demand. Perhaps the most active of these is fireproofing. The amount of construction work in the past has been a helpful factor here, and has been conducive to increasing the call for this line. Firebrick are in good demand, though not rushing now. In fact there has been no rush for any line, but on the whole a very fair call for a larger number of clay specials.

One of the exhibitors at the Sixth Annual Dairy Show, held here a short time ago, was the Davenport Brick & Tile Co., of Davenport, Iowa. This company had on exhibition a portion of a clay block silo. While not very new, it is one of the newer ideas for the clay manufacturer, and one that seemingly offers an outlet for his products. The silo of clay is said to be equal if not superior to any other type, and the increasing use of this on the farms, has afforded favorable opportunity to the clay man who cared to increase his special line.

Mr. White, at the office of the Jenkins & Reynolds Co., notes a satisfactory business in face brick at the present time. There has been a continued demand, that has made up at least to some degree for the inactivity during the summer months. He feels, provided the weather continues favorable, that there will be a fitting close to a year that has been unfavorable for the greater part.

The Masons Specialty Co. is not as active as the conditions should really warrant. It is growing late now for much in the way of business, and on this account there is not very much to look forward to for the next few months.

Mr. Wagner, president of the Northwestern Terra Cotta Co., reports that the company is very active, and that the plant is being operated on full time. This concern has a large number of office and store buildings in Chicago for which it is supplying the terra cotta, and this, together with the orders from other sections, has been keeping the plant busy. The addition has been completed and is now being occupied by the company making the capacity of the same far greater.

The Wm. E. Dee Clay Mfg. Co. has been doing a very nice business in clay lines this year. While the sewer pipe line is dull, the demand for other products has been large enough to offset this, and the year has proven a very good one. The two plants are still in operation and will be for the remainder of the year.

The Illinois Terra Cotta Lumber Co. is busy, and the demand for fireproofing is such as to give the company enough to do for the present at least. The fall has shown an increase that looks favorable.

The Meachem & Wright Co. say that the face brick demand is very fair, though it could be more active. Still there is a better demand than was the case in the past, and for this reason there is no complaint.

The McRoy Clay Works have had a fair year in clay conduit. Now there is less activity than might be expected at this season, and there is not likely to be much doing until

the coming of spring. Clay conduit is still the popular kind for underground wires, and is always in fair demand.

The Midland Terra Cotta Co. is pleased with the amount of business done in the past and with the prospects. The addition to the plant is nearly completed and this will be a very helpful factor in making the orders move along more promptly. The year has proven a good one for the new organization.

THE CITY OF BROTHERLY LOVE.

Philadelphia, Pa., Nov. 9.—The brick season is now drawing to a close. There is not much building going on at present, but a great deal has gone forward this year as a whole and much is being projected for the coming year. Some of the city work has been held back, by court actions, it being claimed that the specifications were improperly drawn. There is a graft investigation on now and the committee apparently has found many irregularities in letting city contracts and it seems certain bidders have been favored above others.

There has been spirited competition between the brick, stone, steel and concrete interests. The trade here is keeping close watch on the New York City fight and the result will be reflected throughout the entire country. It means a great deal to clay manufacturers and is a question now of national importance.

Now is the time to boom the use of brick, especially for factories, warehouses, office buildings and dwellings. It is cheaper than stone, cheaper in the end than lumber, and as to price its only competitor is concrete. Brick, hollow tile, terra cotta, etc., can be used to better advantage and present a more artistic appearance than any other known material. The beautifying of building interiors by the use of fancy and plain tiles has progressed to a real art and is receiving much attention from those who appreciate the beautiful and artistic. The recent figures shown as to the high fire loss of New York and the low fire loss of London have set the people to thinking on this subject.

The brick business here for the year has been fairly satisfactory, considering the condition of business in general. Terra cotta is becoming more popular every year, tile is doing exceedingly well, the paving brick concerns have done fairly well, pottery lines are fairly active, sewer pipe has been a little quiet and fire brick has had only a moderate demand.

Some big building projects to go ahead here are the following: a city convention hall in Fairmount Park, at Girard avenue, to cost \$4,000,000, to seat 30,000 persons. This, it is said, will be the largest convention hall in the world. The Philadelphia Stock Exchange will erect a new \$750,000 building at Broad and Walnut streets. The Manufacturers' Club will build close by it a handsome club house to cost about \$600,000. The Vendig hotel at Twelfth and Filbert streets, will cost about half a million. A police station will be built at Twenty-eighth and Oxford streets and one at Thirty-ninth street and Lancaster avenue, to be of brick, marble and terra cotta. T. D. Steinmetz will build 52 two-story brick dwellings, and N. J. Sickels will erect 54 brick houses. John M. Whilan will build 52 two-story brick houses. Calvin W. Rogers eight three-story brick dwellings and E. F. Von Helfenstein will construct a four-story brick and terra cotta apartment house to cost \$150,000. P. A. B. Widener will erect for the Ritz-Carlton syndicate a handsome hotel at Broad and Walnut streets. The Bellevue-Stratford and the St. James hotels will both enlarge their places. Hewitt & Paist have prepared plans for the new hotel Windermere to cost \$2,000,000, to be built at 234 South Broad street, to be eighteen stories high and fireproof. Another new hotel will be erected at Broad and Locust streets. A syndicate, headed by Charles P. Taft, of Cincinnati, is planning the erection of a big hotel on Chestnut street, to have 750 rooms. T. Coleman Du Pont and the Vanderbilts are also interested and the cost of the hotel will be \$2,500,000 while the total amount invested will be \$5,000,000.

The Lehigh Valley R. R. is building three more terra cotta stations at Meshoppen, Fullerton and Cementon and probably will erect one at Trumansburg and Lehigh-ton, Pa. The company will then have ten such terra

cotta stations and they present a very neat and artistic appearance.

The Rockwood (Pa.) Brick Co. has made a number of improvements at its plant and installed considerable new machinery.

Tapestry brick is being used here a great deal, laid with a heavy joint. It looks good and is in favor with the architects. Philadelphia is a great iron-spot brick market and more is being used every year.

The Camden (N. J.) Pottery Co. has had a good year; have had 100 men employed steadily, making earthenware and sanitary goods.

The National Fireproofing Co. has operated its plant at Keasby (N. J.), at full capacity throughout the season, employing 250 hands.

The Homestead (N. J.) Brick Co. has made some additions to its plant. They are making common brick and have run full time, during the season.

Louis N. Rancke, who was formerly general manager of the Baltimore (Md.) Retort & Fire Brick Co., has taken the position of general manager of the Vulcan Fire Brick Co., with office in the Knickerbocker building, New York City.

The plant of the Volant (Pa.) Brick Co. which was destroyed by fire, is being rapidly rebuilt and will be ready for operation about December 1st. A permanent brick building is being erected for the boiler house and the remainder of the plant will be composed of temporary buildings which later will be replaced by brick. Owing to the rush of orders, the company did not desire to take the time necessary to build all permanent buildings at present.

THE BLUEGRASS REGION.

Louisville, Ky., November 11.—The fall building season is now fairly booming in the Bluegrass territory, and consequently the brick manufacturers are finding more than enough to do. There is little, if any, future business being booked at present, for within the next thirty days or so winter will settle down for several months and will place an effectual quietus upon the structural interests as far as general building is concerned, for that length of time.

However, in a \$5,000,000 building year it is certain that there is enough brick work to provide one of the most prosperous fall seasons in the past decade and consequently immediate activity is of immense proportions and the clay workers have no opportunity to stop and forecast duller times ahead. In fact, there is scant cause for alarm in this regard, for it will not be cold enough in Kentucky to retard building operations and material delivery until the middle of December or the first of January.

As it is, structures that are now in course of erection in the Falls Cities are being rushed to completion as such jobs have never been rushed before. There is the \$800,000 12-story Watterson hotel on Walnut street near Fourth Avenue. Within the past month the immense frame of the building was completed in record time and the brick and stone-work, the most laborious features of the job, are now proceeding. The 10-story office building of the Falls City Construction Co., at Center and Jefferson streets has also proved to be a world-beater, inasmuch as the brick-work on the sky-scraper was begun when the structural iron-workers were still riveting away 100 feet above on the topmost floors.

The contract for the erection of the 18-story office building of the Inter-Southern Life Insurance Co., at Fifth Avenue and Jefferson streets, has been awarded to the Selden-Breck Construction Co., of St. Louis, and the brick work will be sub-let in the near future, although the foundation is just being sunk and masons cannot begin to work for several months. Whisky warehouses and other business structures, throughout the city and state are progressing in equally fine shape and one of the best commercial building fall seasons in the past decade, is promised. There is a normal amount of residence construction, also, although homesteaders prefer to commence their building operations in the spring, when impending winter does not threaten.

Every brick plant, in the Bluegrass territory, is running full time and is rushing deliveries as rapidly as possible. Inasmuch as the harvest season is over in the state and a good demand is felt, the railroads are furnishing cars for up-state shipments with regularity and no traffic complaints are registered. These have been a fine percentage of plant improvement and extension during the past month, tending to swell the aggregate investment of Kentucky and Tennessee clay-working interests.

It was recently announced by the Board of Public Works, in Louisville, that \$23,000 worth of vitrified block paving is to be contracted for by the city within the next few days. The Gateway City is a strong supporter of paving block and it is proposed to lay a number of squares of street with this approved material in the very near future. The Board of Works has also authorized the complete inspection and repair of the city's drainage and sewer systems. Andrew Kast, superintendent of sewer construction and William McFarland, superintendent of street construction and re-construction, have embarked upon their inspection duties and expect to have the municipality ship-shape by the time the snow flies.

M. J. Bannon recently secured an option on an extensive tract of what is believed to be very valuable clay land near Hawesville, Ky., and is testing out the material at the Louisville Bannon headquarters, preparatory to closing a deal for permanent occupancy of the property.

The Lebanon Brick & Tile Co. put an up-to-date plant in operation at Lebanon, Ky., last week. The company was recently formed by R. L. Goodin and T. M. Estes, well-known clay-working capitalists of that section. The plant has a capacity of 40,000 pressed brick per day and also produces a wide range and large quantity of drain tile, from four to ten inches in length. The Lebanon works is equipped with the most approved clay-working machinery, and is one of the few plants of its kind in that section of the state operated entirely by electricity.

It is reported that a new brick plant of considerable capacity is being equipped and will be put into operation in the near future by capitalists in the rich shale beds near Grayson, Ky.

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BRICK

AND CLAY RECORD

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No. 11.

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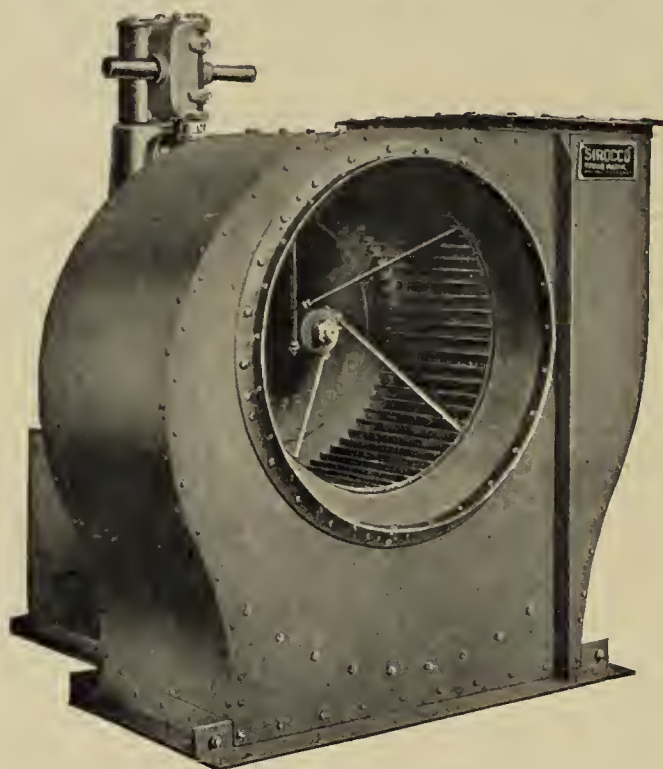
Table of Contents

	Page		Page
Seven Centuries Old	Frontispiece	Drain Tile and Drainage—We Know It Hurts—Hard vs. Soft Tile—A Day's Ditching	420-421
Time to Get Up Steam.....	403-404	Report of Geological Survey.....	422
Terra Cotta Pottery, by Allen E. Beals..	405-406	The Superintendent—Practice vs. Theory—Peculiar Damage Suit.....	423-424
Time An Important Factor in Vitrification, by A. V. Bleining and T. L. Boys...	407-408	Paving Brick Department—Rochester Roadfest—Rehabilitation of National Road—A Good Road's Booster.....	425-427
Attractive Canadian Display—Newspapers are Taking Notice.....	409	General Pottery News.....	428
Addition to the Northwestern Terra Cotta Co.'s Plant	410-411	Sand Lime Convention—New Nebraska Plant	429
Third Highest Chimney.....	412-413	The American Shovel.....	430
Arnold-Creager Co.—More Concrete Disasters	414	An Anchor to Windward.....	431-432
Exploitation Methods	415-416	A Demonstration of Explosives.....	433-435
Parker-Lohman Plant	417	Trade Review—Our Eastern Letter—Promising Prospects in Middle South, etc.,	436-442
Editorial Comment	418		
Official Announcement of Conventions.....	419		

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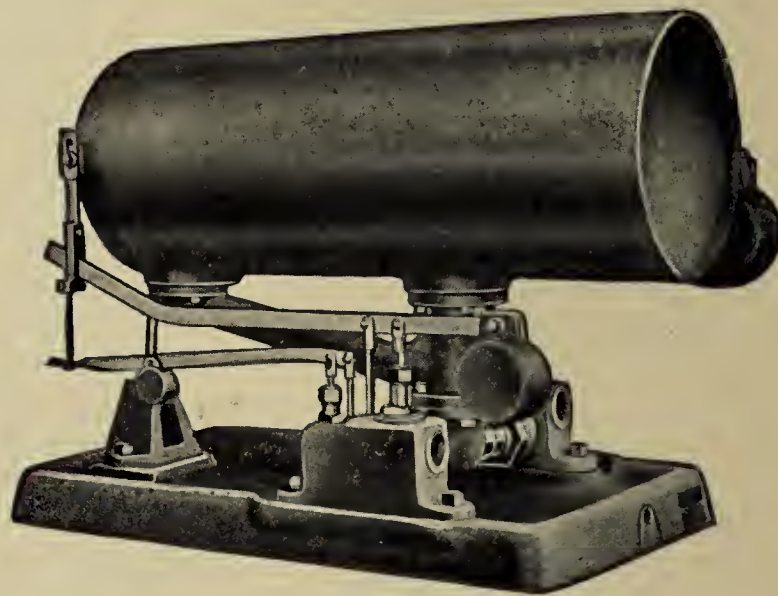
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VOL. XXXIX—No. 11

BRICK AND CLAY RECORD



DECEMBER 1, 1911

TIME TO GET UP STEAM

Intense Enthusiasm and Interest in Clay Show shown by the Many Reservations Already Taken. Large Number of Designs for Exhibition Structures Submitted in Architectural Competition, Results of which will be Announced in Our Next Issue

The reservations of floor space, already taken, indicate the certain success of the coming Clay Products Show, to be held in the Coliseum, in Chicago, next March. The enthusiastic interest being taken by so many manufacturers of clay products in the success of the enterprise is of a practical as well as a sentimental character. While they are broad minded enough to give their

being properly represented at the show, but have not yet closed arrangements for space or commenced to plan their exhibits. This article, therefore, is in the form of a suggestion to these manufacturers and others, that it will be well to take "time by the forelock" and get busy at once to insure the certainty of a creditable display. While it is quite possible to prepare a mediocre exhibit



support to the Exposition, because of the general benefit it will be in promoting the burned clay interests, yet they also realize that the show will be of practical benefit to them as a means for promoting their own sales.

A considerable number of manufacturers of clay products of various kinds have expressed their intention of

within a short period of time, yet the object in making an exhibit is to show up the exhibitor's products in the most effective and attractive manner to attract the greatest attention and produce the best possible results. Any exhibit is welcome and will contribute to the value of the show but the exhibits which will secure the most pub-

licity in the way of newspaper and magazine articles are those which will be the most artistic, attractive and interesting.

It is not such a difficult matter to plan and prepare an attractive exhibit of clay products, if proper study is given to the matter and time taken to prepare the material and arrange for its construction. The exposition management has secured two more days' use of the Coliseum at the rate of \$1,000 per day for the purpose of allowing more time for the installation of exhibits and, therefore, exhibitors can be assured that there will be sufficient opportunity for them to build their structures no matter how elaborate they may be.

To assist the manufacturers in planning their exhibits, "Brick and Clay Record" went to the expense of initiating a prize competition among the architects to secure designs suitable for exposition structures and this contest closes December 1st. The architects throughout the country have taken much interest in this matter and a large number of designs have been submitted. The announcement of the awards will appear in our December 15th issue.

The first prize offered is \$100.00; the second \$50.00, and the third \$25.00. Through this means "Brick and Clay Record" will be enabled to place before its readers a large variety of designs suitable for clay show exhibits. Many manufacturers of terra cotta, fireproofing and other clay products naturally have their own ideas fixed regarding the proper display of their products so this competition was confined entirely to structures suitable for displaying brick, although we presume many of the designs could be used for other purposes. One of the designs submitted is shown in the accompanying illustration, being a striking example of the beauty and effectiveness of an exposition structure of this kind.

The exhibitors will, of course, desire to display their products in such a manner as to create the most favorable impression as to their merit and beauty and this can best be done by displaying the product in the form of a structure of real architectural beauty. Architects and contractors from all parts of the country are planning to come to Chicago to attend this exposition, to study the merits of burned clay products and modern fireproof construction. Brick and other clay products are to be placed before the great American public and shown up in a way that requires us to "put our best foot forward." This is an opportunity for the clay interests and at the same time, it is imperative that we show up our products in the most creditable manner.

Among recent acquisitions to the clay show is the support of the Northwestern Terra Cotta Co. This company has arranged for a magnificent exhibit to display the beauty and merit of its products. It has taken four spaces on the Coliseum floor and among other things, will erect a triumphal arch 27 ft. in height. This will be an architectural feature which will attract much attention and their display will be one of the beauty spots of the Exposition.

The official announcement of the annual convention of the National Brick Manufacturers Association appears in this issue and preparations are being made for the greatest gathering of clay workers which has ever been held. It is safe to say that the holding of the various national conventions in Chicago at this time, in connection with the great clay show, will result in a gathering of fully two thousand of the clay products manufacturers of the country, and that the coming convention of the N. B. M. A. will be the most important and most largely attended on record.

The sewer pipe and paving brick interests have already made their arrangements and the "Municipal Exhibit" will be one of the important features of the show. The floor and wall tile interests and the pottery interests of the country are now considering the matter and it is expected that important action will be taken by them within a short time. It is desirable that both of these interests have joint exhibits of such a character as to make displays of great beauty and interest.

The management of the exposition urges manufacturers of clay products to write to them promptly regarding reservations for space. It is a matter which should not be delayed or put off until next year. If you are going to give your support to this great enterprise for the promotion of burned clay interests now is the time to act.

SEVEN CENTURIES OLD.

The beautiful frontispiece, "A Doorway in Verona," loaned to us by "Stone," is an excellent example of the durability of brick and stone. It is a view of the entrance to the Piazza dei Signori, called the Bombardiera Portal, and was erected in the thirteenth century. It will be noted that all the carving is symbolical of the military art, the columns being cannon while the bases are drums, the brackets of the balcony bombards, etc. The heavily carved arch, columns and balustrade are of solid stone which combined with the brick walls lends an unusual appearance of beauty, power, and substantiability to the structure. This cut was loaned to us by the courtesy of "Stone," a publication which like "Brick and Clay Record," has made a bold and determined stand against cement, artificial stone, and other cheap substitutes for honest "dyed-in-the-wool" building materials, such as stone and burned clay materials, which make no extravagant claims but which have for ages past demonstrated their superior qualities.

The following is an excerpt from an article, on the subject, in the last issue of "Stone":

"The great source of weakness in concrete is the impossibility of obtaining a perfect bond between green concrete and that which has already dried. In stone masonry fresh mortar is always used and there is never the slightest difficulty in bonding it thoroughly with the stone. What is more, in order to minimize the weakness of the mortar, all careful specifications provide that the cement be spread as thin as possible.

"Engineers are fond of telling us that concrete is as strong and durable as any other material of construction. But they admit that it must be prepared and laid with the greatest conscientiousness and intelligence. They cannot escape the many fatal disasters, far more than have attended the use of any other material construction. They try to explain these failures by declaring that the designer or the workmen have violated well established principles. We oppose most strenuously a material that lends itself so readily to abuse, and in which it seems impossible for practice to equal precept."

MAKES A HEAP OF BRICK.

Chicago is a brick manufacturing center! Yes, it's true. The city makes enough brick each year, it is said, to give ten or more to every inhabitant of the United States. That means nearly two billion brick. Most of these brick are utilized for the construction of new buildings in the city and suburbs, though some of them are shipped to other points. The year's output from the big clay holes which one occasionally sees from the car windows would build an automobile roadway fifty feet wide from Chicago to New York.

TERRA COTTA POTTERY

By Allen E. Beals

Portland cement now has a rival in another field, which architects and builders have been prone to accord exclusively to concrete. Burned clay has invaded the realm of the formal garden.

As far as the East is concerned, and probably the entire country, earthenware pottery, heretofore, has been the only formidable rival to cement for urns, vases and other decorative features of the landscape-garden. But new opportunities for the burned clay industry have opened up since the Atlantic Terra Cotta Co., of New York, has proved to the satisfaction of architects that garden pottery can be successfully and cheaply produced in terra cotta, of exactly the same hardness and shadings afforded in architectural faience. The story of how the Atlantic Terra Cotta Co. finally achieved this feat was told a few days ago by Mr. E. H. Putnam of that company. It seems that when Stanford White made one

ramics in terra cotta, but also devised a method of perfecting color tones ranging from marble white to colonial yellow and from antique green to Pompeian red. In fact, they even went farther and produced a limestone gray, in case that effect should be desired.

The illustrations, herewith shown, give only a meagre idea of the richness and beauty of the work turned out by this company, and the fact that some of these jars and vases may be seen in the foyers of the Plaza and Waldorf-Astoria hotels, the interior of the New York University Club and in many of the most beautiful gardens in the country, formal, Italian and informal, bespeak the approval of connoisseurs who seem to feel that there is nothing heretical in owning a vase or jar, copied from the Orient, when that jar or vase is made of clay instead of molded stone.

The activity of this company has not been confined merely



Table Standard Suitable for Formal Garden or Foyer.

of his frequent excursions into the foreign fields of art, he discovered in the foothills of Italy, almost within the environment of Vesuvius, some rather remarkable vases, evidently made from a type of burned clay different in some particulars from the ordinary pottery. He brought one of these home with him, and after many futile attempts to produce a satisfactory replica, he took the matter up one day with a representative of Mr. Putnam's company.

That was a number of years ago, and at the time of his demise the company was beginning to make some progress that portended success. There was, however, difficulty in procuring absolute uniformity of expansion and contraction in the clay when placed in and taken from the kilns. The experiments cost a large sum of money, but the possibilities of producing, at reasonable cost, the artistic effects not only for landscape purposes but for halls and residences and hotel and theatre foyers, encouraged the company to continue its experiments until it recently perfected a system for not only reproducing Roman, Egyptian, Grecian and Assyrian ce-

to the production of jars and vases, but artistic urns for house plants and trees, sundial columns and pedestals, gargoyles, window boxes, garden table legs, and even supports for pergolas, have been successfully manufactured from terra cotta.

In no sense are these terra cotta pottery articles imitations of the originals. Inasmuch as the original antiques were made of the primitive type of terra cotta, these art works are, in fact, improvements on the originals.

The versatility of this garden pottery is shown by the fact that it can be made in more than one hundred different color shades and in any complicated forms, such as occur in faience architecture. Furthermore, it is harder in composition than ordinary earthenware pottery, hence it has more enduring qualities.

These vases are dressed by hand in a plaster mold and are then retouched by hand and thoroughly dried, the burning taking place in a muffled kiln. A temperature that closely approximates 2,300 degrees is maintained for a certain specified time and when the articles are taken out and cooled by a

secret process, the finished ware has even a more metallic ring than has a vitrified paving brick. At the same time the urns and vases are porous enough to permit of plants thriving in them.

The accompanying illustrations give some idea of the scope

porcelain covering costs no more than with ordinary paneling, and architects believe that these plates will solve the problem of housing in the tropics, since a house built with walls, floors and roof of this porcelain will resist damp, heat, disease and insects.



An Intricate Cast on Account of Unequal Contraction and Expansion.

of the experiments made by this company and the artistic effects so far produced.

PORCELAIN WALL COVERING.

W. H. Turner, an English pottery expert, has been working on a patent for many years and has finally invented a system whereby at a comparatively small cost, he is enabled to manufacture glazed slabs of pure porcelain so translucent that light can be seen through its half inch of thickness. These slabs are made in single pieces of any size up to that of the largest sheets of plate-glass, and are said to be so strong that an elephant could stand on one, without breaking it. These slabs are to be used for facing walls and are said to offer a means of using decorations which in color and brightness rival the painted wall decorations of Pompeii, for there may be printed on the slabs in its "biscuit" or porous stage of manufacture, designs or pictures in any desirable variation of coloring.

It is said that to line the walls of a room with this



Typical Specimens of the Artistic Terra Cotta Pottery, Made by the Atlantic Terra Cotta Co.

It is said that a factory is to be built on the banks of the Thames for turning out these new porcelain slabs and panels.

BLOCK SHIPPED FROM IOWA TO NEW YORK.

The Davenport (Ia.) Brick & Tile Co. has received an order for three carloads of silo block to be shipped to Millbrook, Dutchess county, N. Y. This order is exceptionally noteworthy, inasmuch as the Hudson River country is one of the greatest brick manufacturing districts in the world. This is accounted for partly by the fact that the clay from which the Davenport block is made is of a different character than that found in New York. The brick will be used for making two silos, measuring 20 ft. in diameter and 48 ft. in height. Recent orders for these



A Terra Cotta Jardiniere Simple in Design, but Difficult to Cast.

silo block have also been sent by this company to Elgin, Ill., Hustiford, Wis., and Muskegon, Mich. The block is curved and has a radial end cut.

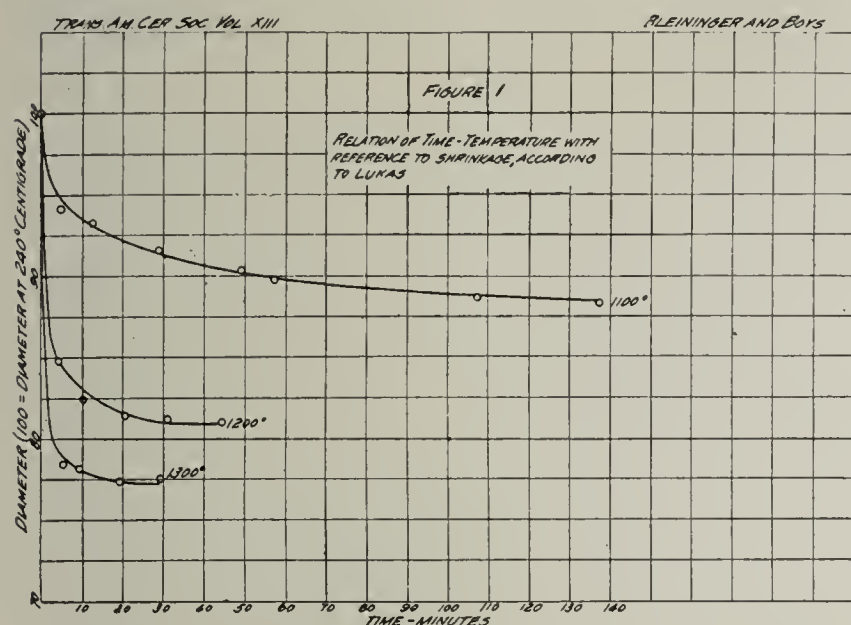
The Ludowici Celadon Co., of New Lexington, Ohio, have been enjoying an excellent trade in roofing tile. It has increased so rapidly as to make extensive additions necessary to their already large plant.

TIME FOR VITRIFICATION

Action of Time An Exceedingly Important Function in the Vitrifying of Shale Wares*

By A. V. Bleining and T. L. Boys

That time is an exceedingly important function in the maturing of clays and bodies is so well known that the statement hardly needs repetition. Our attention is frequently called to the fact that a certain result may be obtained either by the application of a higher intensity of heat for a shorter time or a lower temperature for a longer time. The practical effect of the time factor we see constantly illustrated in the burning of pottery and other bodies, the softening of pyrometric cones, etc.



It is a well known fact in the case of the latter, that a difference of as much as a hundred degrees may be observed between the softening points determined in a small test furnace and a commercial kiln. Yet there is a definite limit with reference to this matter depending upon the kind of body. To illustrate, it is obvious that a feldspar body may show the effect of long firing in a marked degree, while a calcareous composition is more indifferent in this respect. Even with reference to the former, certain limits must be clearly recognized. Thus it is not likely that a porcelain body ordinary maturing at, say, cone 10, can be made to vitrify at cones 6 or 7 by increasing the time of firing within reasonable length.

In discussing the vitrification of clay, we are somewhat too prone to ascribe the closing up of the pore system entirely to the action of fluxes which cause incipient softening and the resulting lack of molecular cohesion due to the decreased viscosity. Under these conditions, contraction takes place, due to the forces which exert an inward pressure upon the surface of the substance. Yet this is by no means true. Part of the contraction is undoubtedly caused by the shrinkage of the colloidal portion of clays, since, indeed, such condensation is typical of amorphous substances in distinction from crystalline materials. We need think in this connection only of pure alumina, magnesia, zirconia, etc. The contraction of kaolin begins soon after the chemical water is drawn off, i. e., when the substance is a typical amorphous body. Lukas,¹ in an investigation of the fire shrinkage of such substances, determined the contraction suffered by small specimens of Zettlitz kaolin.

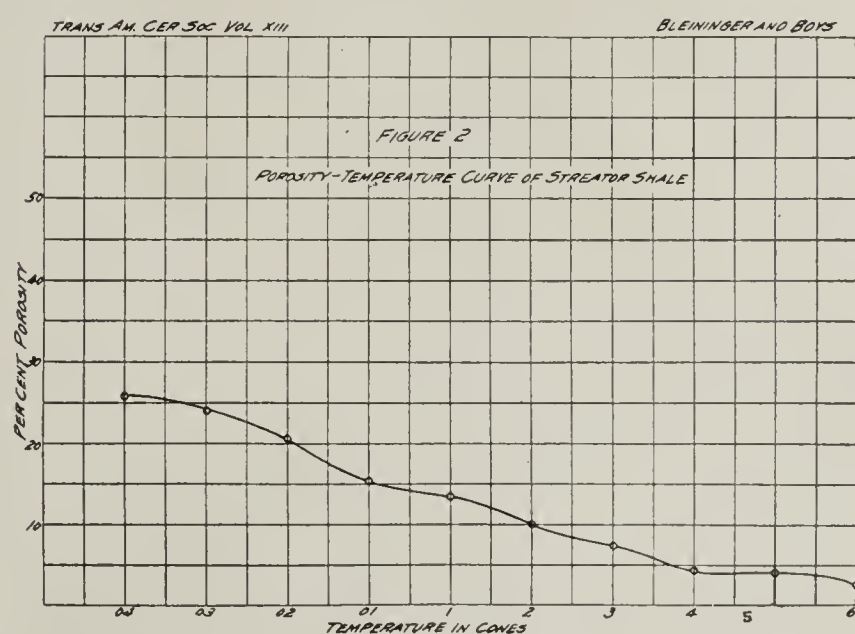
*From Vol. XIII, Transactions of American Ceramic Society.

In Fig. 1 the results of measurements made upon these are given, showing clearly the different rates at which the condition of apparent equilibrium is approached as well as the rate at which the pore space is closed up at different temperatures. With regard to the first point, it is seen that at higher temperatures, constancy in porosity is approached more rapidly; and with reference to the second, it is clearly shown, that, as is to be expected, higher temperatures cause the shrinkage to be larger. This increase in shrinkage becomes small as the temperature rises. Thus while the gain in shrinkage between 1,100° and 1,200° is quite large, it is, of course, very much smaller between 1,200° and 1,300°. At still higher temperature the values would tend to coincide more and more.

Mellor² has correlated the time effect as expressed by reburning a sagger body repeatedly at cone 8. He finds that the rate at which the contraction takes place may be represented by an expression resembling that for the speed of a bi-molecular reaction. This, of course, is but a coincidence. According to this "the change of contraction during each firing is proportional to the square of the contraction which is yet to be made."

The work to be described in this paper deals with a paving brick shale from Streator, Ill., the porosity-temperature curve of which is shown in Fig. 2. The shale is an excellent material, well known for its high quality.

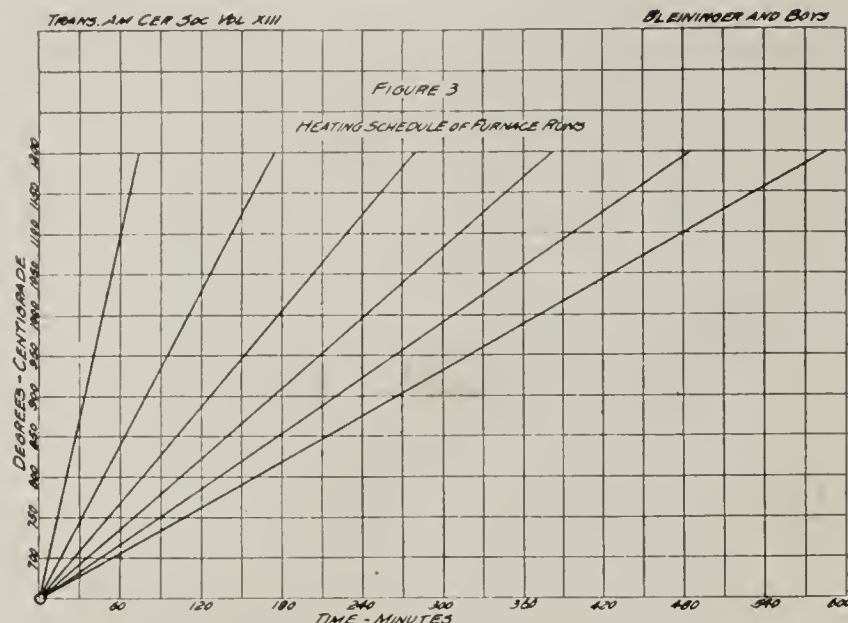
The shale, after disintegration, was made up with water into a fairly large lump, thoroughly kneaded and mixed, from which smaller cylinders were formed, weighing from 16—19 grams in the dry state. These were dried, and then slowly heated up in a small gas-fired muffle kiln to 650° C. until all of the carbon was burnt



out. At this stage the average porosity was determined in the usual way by the absorption of water *in vacuo* and calculation from the formula: $100 (W - D) \div (W - S)$, = per cent porosity, where D, W and S represent the dry, wet and suspended weights respectively. The average porosity was thus found to be 37.4 per cent.

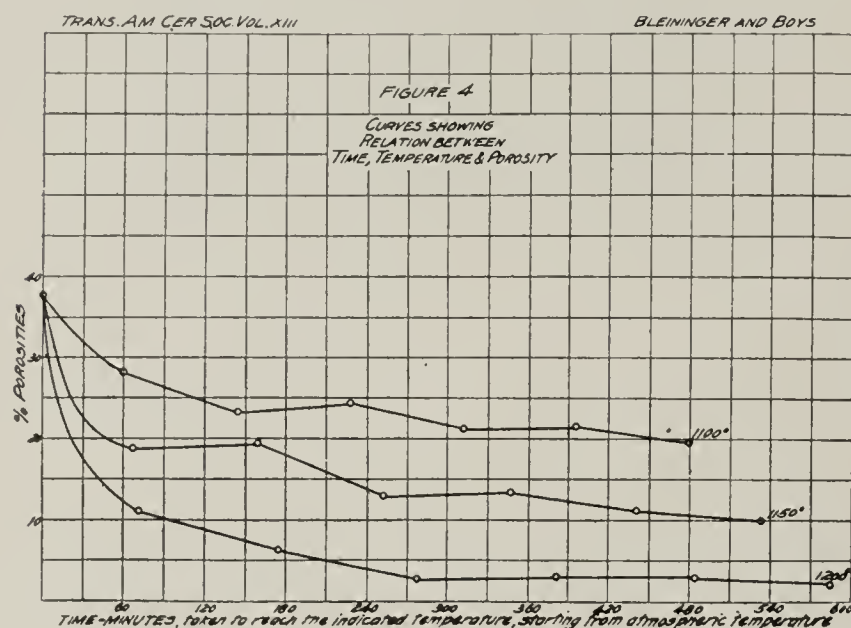
The heating of these specimens to higher temperatures was accomplished in a small electric platinum resistance furnace, 1¼" in diameter and 3" high, inside. After re-

peated trials, the zone of greatest temperature uniformity was determined. Within this zone the specimen was placed, supported by a small clay block. Notches were cut into the top of the latter so as to secure better heat distribution around the supported end of the cylinder. The electric current was regulated by means of two



rheostats. The specimens were heated up according to predetermined schedules which are shown in Fig. 3. In each case the heating curve was a straight line, ending at 900° C., 950°, 1,000°, 1,050°, 1,100°, 1,150° and 1,200°. For each of these points the porosity of a specimen was determined, thus requiring $7 \times 6 = 42$ furnace runs. The rates of the six heating schedules varied from 16 to 2.05° C. per minute.

The results of the work are represented in Fig. 4, where the curves for the temperatures lower than 1,100° have been omitted, owing to the fact that they became practically parallel to the abscissa at fairly high porosities. The 1,100° and 1,150° curves show a distinct slope with the highest time, and, theoretically, would meet the minimum porosity of the 1,200° curve after 1,360 minutes.



Similarly, the 1,150° curve would meet the minimum porosity line after 970 minutes. This would be equivalent to saying that a heating treatment, such that 1,100° is reached at a constant rate in 1,360 minutes, would bring about the same result as the heating up at the constant rate of 2.05° per minute to 1,200°, corresponding to 585 minutes. Whether this statement is borne out by the fact cannot be said at present. To prove this experimentally, the time should have been lengthened so that the curves

would intersect. Under the conditions prevailing at the time this experiment was carried on, this could not be done.

An examination of these curves will show, as is to be expected, that the drop in porosity or, generally speaking, the rate of vitrification is very much greater at the beginning of the heating and gradually tapers off as it is continued. Thus, during the first 72 minutes the rate of vitrification is about 7.5 times as great as that between 72 and 174 minutes, reduced to porosity drop per minute. This rate of vitrification does not follow the rule suggested by Mellor.

Considering points of equal porosity, it is observed, for instance, that a porosity of 20 per cent is obtained at 1,100° after 480 minutes, while the same point is reached in a 68-minute run up to 1,150° and in considerably less time in the 1,200° run. Similarly, the 10 per cent porosity is reached in a 72-minute heating up to 1,200° and after 536 minutes up to 1,150°.

It is proposed to carry on further work along these lines with longer time and closer temperature intervals so that numerous definite intersection points may be obtained. It is also proposed to bring in the question of heat absorption of clays.

¹ Hoffmann, Sprechsaal, 44, 143-45.

² Zeitschrift für physikal. Chemie, 52, 327.

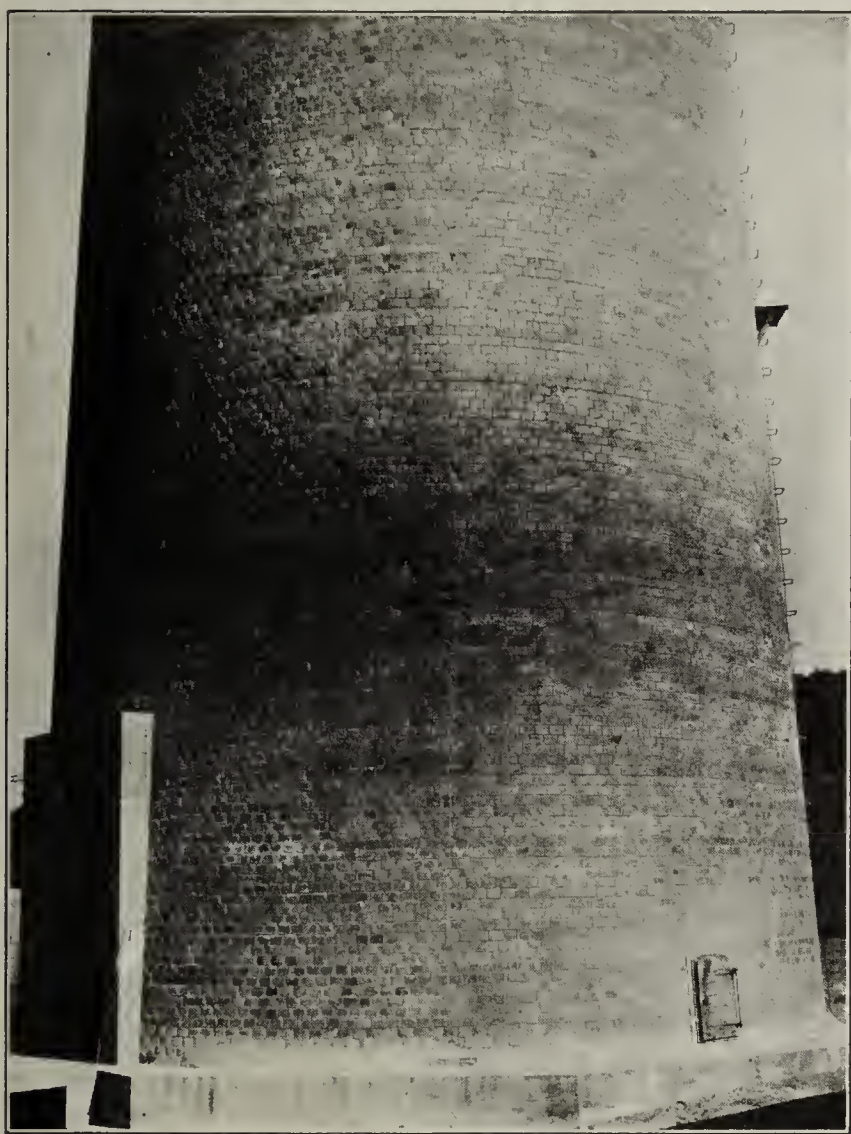
³ Trans. English Ceramic Society, 9, 79.

CHINA CLAY MONOPOLIZED BY ENGLAND.

The only industry which the British are believed to have exclusively in their own hands is the production of China clay, used for the manufacture of highly finished paper, in the ceramic arts and the textile trade, according to the following from "Popular Mechanics." The greater part, if not all of the product now comes from Devonshire and Cornwall, the latter producing by far the greater portion. The production is estimated at 2,076,682 tons, annually, for the two sections, the value being set at 761,521 pounds sterling, or \$3,700,992. China clay is believed to be decomposed granite although scientists differ as to its exact origin. It is obtained in a simple manner which requires no great technical skill. It is usually found in beds shaped like a bowl or basin, between granite hills and is covered by what is termed an "overburden" which varies in thickness from 6 ft. to 40 ft. A pit is formed by removing the over-burden and a shaft is sunk outside the bed on more solid ground, conveniently near. A passage called an "adit level," being almost horizontal but sloped enough for drainage, is driven from the shaft into the bed of clay. A stream of water is turned into the top of the pit and runs down over the face of the clay. Workmen stamp about in the pit to dislodge the clay, which then flows in liquid form into a hole in the bottom of the pit through the adit level to the bottom of the shaft, from whence it is pumped to the surface. Sand, mica and other impurities in the clay are separated in what is known as a "mica drag," a tank or basin so arranged that the mica and other particles fall from the clay proper by force of gravity. The clay is then passed into settling tanks and from these the water is drawn off and the deposit of clay removed to the kiln where it is dried in blocks. In this form it is shipped to the potteries or other factories using it. There are several grades of the clay and the supply of none of them is quite equal to the demand. In the United States a clay that has some of the characteristics of the China clay is found in the South and is called "edible" clay from the fact that many people eat it and the further fact that pottery clays are often tested by being chewed, that which remains in a gummy state after chewing being regarded as of good grade.

imum crushing strength of 4,000 pounds per square inch, not deducting the vertical perforations. They are entirely acid proof and specified to resist a temperature of not less than 2,000 degrees Fahrenheit. The column is cylindrical from top to bottom, with a constant batter of 75 per cent. A wind pressure of 50 pounds per square foot on a flat surface, or 25 pounds per square foot on the projected area of the round shaft, was assumed in the design, and at no point in the structure is there any tension under the combined forces of weight and wind.

The maximum pressure at any point is a fraction less than 19 tons per square foot. The calculations for tension at any horizontal joint are calculated without taking into account the weight of the lining. In other words, there is no tension in the structure with the lining out, which lining is supported on corbels built out from the main walls of the chimney. The maximum pressure is not over 19 tons per square foot with the lining in. These specifications necessitated an unusually sharp taper, which gave the finished structure not only a bold but a very



Detail of Stack at Base, Showing Plan of Construction.

striking outline. The extremely narrow diameter at the top and heavy taper is unusual and unique.

In order to resist the action of the dilute wet acids, the chimney is lined throughout with 4 inches of solid radial acid-proof brick, separated from the main walls by an air space of 2 inches. These brick are laid in an especially prepared acid-proof mortar, supported on corbels built of heavy lipped shape solid block. The top brick of each section of lining being made wedge shaped and fitted up under the lip of the corbel block above, thus forming a drip or drain and preventing the acid dust from getting back of the lining. The corbels and four courses below the corbels on the inside of the main walls are laid in acid-proof mortar. The upper 75 feet of the outside of the chimney is also laid in acid-proof mor-

tar. The rest of the main walls are laid in cement lime mortar. The top of the foundation, inside of the chimney, is protected by 4 inches of acid-proof paving laid in acid-proof mortar. A drain of vitrified pipe is also provided inside the chimney leading through the foundation to carry off any water or acid that may collect at the bottom.

The top of the chimney is protected with a lead cap weighing 10 pounds per square foot. This cap covers the entire head, extending 2 feet down the outside and 5 feet down the inside, overlapping the top of the last section of the lining. Joints are burned down.

The chimney has a lightning protection, consisting of 4¾-inch solid copper rods, surmounted with platinum tips. These extend 4 feet above the top. There is one down-leading conductor of a ½-inch solid copper rod, not stranded, supported by anchors every 6 feet. All rod fasteners within 75 feet of the top are made of lead, and all portions of the lightning rod for that distance covered with an armor of lead, except the extreme platinum points. The outside ladder to within 75 feet of the top is galvanized, and for the remainder of the way the ladder is also covered with an armor of lead.

Two flue openings are provided at the top of the foundation, 10 feet high and 6 feet wide, reinforced by a system of I-beams and structural iron, all iron covered with an acid-proof protection. For the present but one flue will be utilized, the other being temporarily bricked up with an 8-inch curtain wall.

Perforated radial brick were used throughout the construction of the chimney, which was designed and built by the Alphons Custodis Chimney Construction Company, of New York. Record time was made in the erection, the main walls, 375 feet high, having been built in 55 days; the 375 feet of lining in 18 days. The dead weight of the walls and lining, above the foundation, is 3,305 tons.

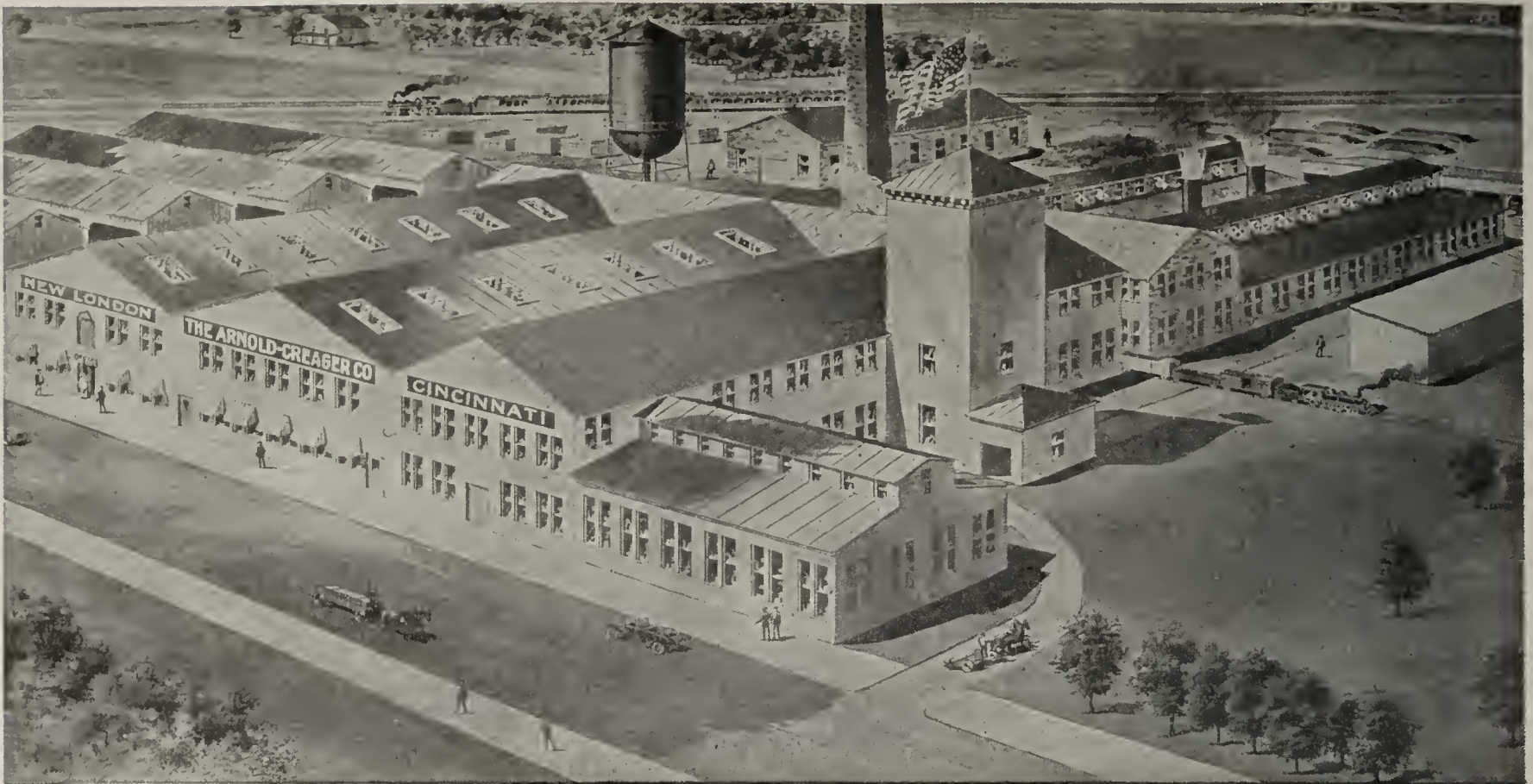
ANOTHER CONCRETE FATALITY.

Chas. Siedell, of Sutherland, Ia., was instantly killed on October 19th by the caving in of the walls and roof of a cave. Mr. Siedell was engaged in removing the forms into which the cement had been cast when suddenly the walls and roof collapsed without warning and fell in on him.

CEMENT AS VIEWED ABROAD.

The methods of calculation for cement construction and the carrying out of the same do not yet seem to be so free from objection that every building of cement, although apparently holding good for awhile after construction, is safe from later loss of strength, on one side by the disintegration of the cement, and on the other by the rusting out of the iron parts through electrolysis. It was announced on the afternoon of October 11, by the Vossischen Zeitung of Primkenau, that, with the taking down of the scaffold on the newly built cement bridge at Reulhau over the Sprette, which was put up at an expense of 30,000 marks, this bridge collapsed. Fortunately, no one was injured; the workmen were able to save themselves.—From the Deutsche Topfer und Ziegler Zeitung (German Pottery & Brick Journal).

The Rookwood Pottery, Cincinnati, Ohio, is to be enlarged by an annex for architectural material, the addition containing about 3,000 square feet. The new part will be added to the north end of the works, and the building will be constructed with due regard for beauty from an architectural standpoint.



A Portion of the Extensive Works of the Arnold-Creager Co. at New London, O.

THE ARNOLD-CREAGER COMPANY.

New London, Ohio, is known among brick manufacturers, throughout the country, as the home of the Arnold-Creager Co., one of the leading brick machinery concerns in the field, and manufacturers of a very well known line of soft-mud brick machines, and other clayworking equipment.

The accompanying illustration shows the extent of the important works of this company. The plant is very complete in all departments and fully equipped for manufacturing high grade machinery.

The Arnold-Creager Co. reports to us that during the past year their sales have nearly doubled those of the year previous. This company has been making steady yet rapid progress, and its outlook for the future is most encouraging.

SHAM CEMENT.

"America leads the world," said a technical journal in commenting on the Austin disaster, "in the manufacture of sham cement." "Perhaps the strongest argument of the advocates of brick construction is that there is no way to make sham brick," says the "Winnipeg Free Press." It further adds that "In a town not so unfortunate as to lie under the menacing shadow of an unsafe dam, the great peril is not water, but fire," and in resisting fire, brick construction rightly made is all that could be asked.

A California newspaper felicitates the concrete interests by a statement that if the concrete buildings are going to fall at all, they do it before they are finished and occupied. This seems to put a large share of risk on the workmen engaged in construction, but these are few in number, compared with the probable subsequent occupants.

The collapse of the bridge at Auburn, Cal., for instance, killed three men and injured five in its fall, while had the bridge been completed and gone down under the weight of a railroad train, there might have been many times that number killed. The argument is poorly taken, as it is a well-known fact that many concrete buildings have collapsed after completion.

MORE CONCRETE DISASTERS.

A few minutes after the workmen had left their work on an apartment building in St. Paul, Minn., several hundred tons of reinforced concrete, composing the roof and floors of the structure, crashed into the basement below. The loss is estimated at \$2,000. The cause is attributed to the pulling of the forms before the concrete had set sufficiently. The workmen may consider themselves fortunate that the accident occurred after the work had ceased, otherwise there would have been a deplorable loss of life, without doubt.

Twenty public school teachers and several school directors were injured at Westchester, Pa., by the giving way of the concrete floor in the vestibule of the high school building, the entire company falling into the basement, ten feet below.

A concrete grain bin at a malt house, which was being erected in Milwaukee, was ordered to be taken down by the inspectors, on account of the frailness of the walls.

CEMENT UNFIT FOR SCHOOL ROOMS.

Patrons of the public school at Peoria, Ill., are justly indignant over the fact that the children in the kindergarten department of the school have been placed in a basement lined with concrete. The walls are so damp that mold and mildew gather thereon. Concrete walls are notably damp and unsanitary, even when above ground, and it seems an intelligent school board would not consider for one moment the placing of children in a cement-lined basement.

A CAR A DAY.

The Globe Brick Co., whose plant is located a few miles north of New Cumberland in Hancock county, W. Va., on the Ohio River, has received the contract for the pavers to be used in the improvement of roads in the Ritchie district, in Ohio county. Delivery has commenced. These brick are said to be of a new type, and made after a plan invented by Capt. John M. Porter. The Globe Co. will ship one car daily until the entire order is filled.

EXPLOITATION METHODS

Catchy Street Car Advertising Keeps Louisville Residents Advised As To The Advantages of Using "Good Red Brick"

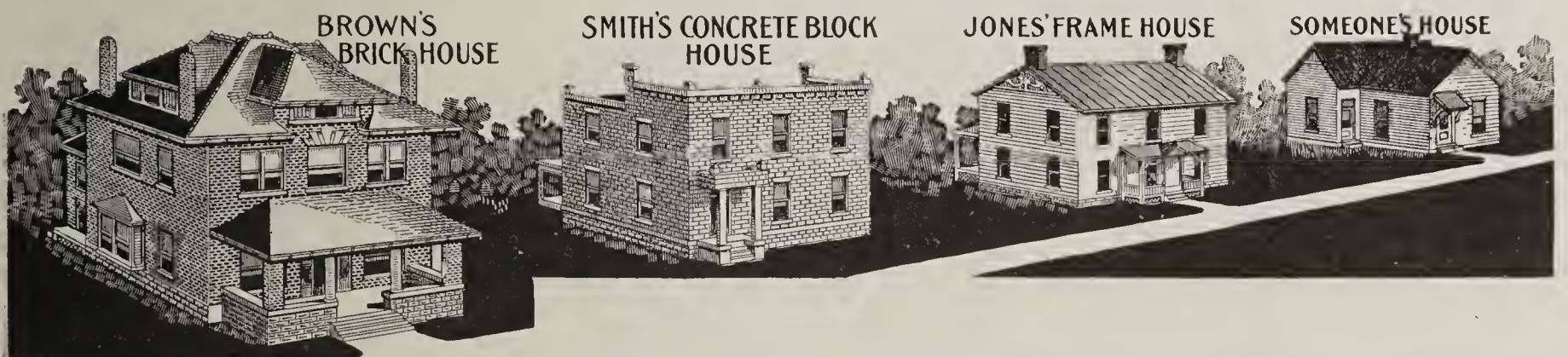
Brick manufacturers throughout the country now realize that it is up to them, to use the vernacular, to provide a way of meeting and taking care of demand that comes directly from the consumer. The extension of facilities for service to meet growing demand which is being derived from sources of popular consumption is a matter which is commanding a lot of attention these days. The problem is the immediate outcome of the advertising campaign which has been instituted throughout the country to impress upon the public mind the superiority of brick building material, in connection with competitive lines, and excellently typifies the trend of modern business ideas in the clayworking field.

The need of facilities to meet consumers' calls may be attributed directly to the success of the general publicity campaign of the brick interests and is therefore to be gladly welcomed as unfailing evidence that householders are flocking to the support of their old structural stand-by. Owing to the fact that manufacturers are placing directly before the public the value of brick in building, and the public is responding heartily to the call, it is necessary for the brick man to expand his system of management and provide means for taking care of individual inquiries from prospective builders, which may seem to be actuated only by passing interest, but which annually roll up a comfortable aggregate of deliveries from the brick plant.

can convince him of the merits of his product, the novice is sure to specify brick construction when actual plans are formulated and put into executive hands for the job.

The Hydraulic Brick Co., of Louisville, Ky., one of the best-known companies south of the Ohio river, has been carrying on an individual campaign of exploitation and has been expanding its resources during the past six months until the policy of the company in going after "domestic" business may now be regarded as fixed. It is aggressive and effective. It goes after new customers and subsequent boosters for brick in the proper manner, and incidentally it matures the prospect into the actual purchaser with the greatest facility because of the comprehensive and efficient service of demonstration which is offered. The results which have been accomplished in the up-building of a big domestic trade, that is the use of brick in residence construction, are its chief feature.

In a nut-shell, the system of the Gateway City brick men is to create demand directly from consumers and then to furnish a convenient spot for the consumer to visit and place his order as soon as he is satisfied as to the steadfast merits of the old reliable material. In the first department, that of creation of direct-consumption demand, there is but one distinctive feature, street-car advertising. General publicity has attained high standing with the brick trade, and everybody



Average Row. Portion of Advertisement Used by Louisville (Ky.) Hydraulic Pressed Brick Co. in a Street Car Advertising Campaign.

In dealing with architects and building contractors, for instance, the brick man does not have to appreciably extend his facilities for practical demonstration of what he has placed before the world in his advertising. Architects are experts in construction and know just what they want and when they want it. The contractor is guided by the architects' plans and specifications. Moreover, he is a man of experience in all kinds of building, knows where to go to get his brick and knows to the fraction of a thousand how many face, hard and salmon he is to order.

The tyro in the building field, the man who is going to erect a residence for personal occupancy or as an investment, is a member of uninitiated thousands who produce orders to the amount of hundreds of thousands of brick for every manufacturer yearly. The advertising campaign which is demanded by modern ideas in the brick business serves to swell this annual figure every year. And the result is that the brick maker has to make special appeal in demonstration to the prospective homesteader who does not know a number one red brick from a wall tile, but who is primarily disposed to regard brick construction favorably, because he has been attracted to the line by general advertising. Before he awards his contract to the builder, if the brick man

now realizes the value of appealing directly to the purchaser through educational advertising. But there is general exploitation and general exploitation, from newspaper ads to form letters. The Hydraulic street-car notice is individual and effective at the same time, incurring but moderate expense.

The expenditure involved in this kind of exploitation has been found to be more productive of results than any similar outlay along other lines. The value of the car card is well known, catching the public in a wideawake moment as it does. The cost is the second consideration.

The company which has charge of street-car advertising in the Falls Cities, a country-wide organization by the way, charges \$1.50 per car per month. The Hydraulic has arranged with the ad syndicate to write and print its cards and expends about \$100 per month in emblazoning "Good Red Brick" from one end of the city to the other. Through equalizing month against month and balancing the busy with the dull seasons, the plan of expenditures enables about 50 street-cars to show the Hydraulic ad one month, while 75 or so are similarly adorned the next.

The copy for the cards is written in a cheerful and humorous manner, just as the wonderfully successful notices

of "Sunny Jim" in the breakfast food line, and the "Gold Dust Twins," which accomplished wonders in building up business.

Lots of street-car advertisers nowadays incline toward the facetious in their copy, for the public is usually good-humored when going down-town or coming home and concrete, convincing facts, when set forth in happy strain, produce fine effect.

Another point in the Hydraulic cards is that they have distinction, as well as sound advice offered in good-humored style. The key-note of the cards is "Average Row," a line of houses that one would find along nearly any street in any city or town. Average Row impresses itself upon everybody's mind and becomes a popular phrase in the community, just as people say jokingly, "When grandma comes the dirt must fly," quoting a bit of well-written ad copy that appears in street-cars throughout the United States. Then there is a grotesque figure, a caricature, representing the outraged householder who has "overlooked a bet" by not building with brick.

Below a drawing of Average Row, reproduced in colors, there stands the reading matter of the notice, three separate jingles being used, each under the same heading. The first of the trio runs as follows:

What makes poor Smith appear so glum?
Is his digestion on the bum?
No, no, dear friend, it is not that,
It's just his house—it fell so flat.
You see, 'twas built of concrete block,
And Smith, tho not inclined to knock,
Says, "Build again? Of concrete? Nix.
Next time I build it's good red bricks."

In the lower left-hand corner of the card it says, "That's Smith. There! It cost him a house to get wise. Sympathize. Don't Imitate."

The second of the Hydraulic series is as follows:

Dear friend, you live in Average Row,
And though perhaps you do not know
Each operation, trick and ruse,
That good and bad contractors use
In building. Harken! Seize this tip!
We know we're right. You cannot slip.
Just "tie the can" to builders' tricks
And pin your faith to good red bricks.

The follow-up advice in the lower left-hand corner of this card says, "Build your house of BRICK and that's one more thing you never have to worry about."

The third card of the series again emphasizes the folly of a bad building investment. It details the experience of Mr. Jones, as follows:

Poor Jones! He looks like he could weep,
He built of frame because 'twas cheap.
Scarce ten per cent was all he saved,
And Jonesy thought that he'd behaved
Like Russell Sage or Hetty Green.
But now he's changed his mind, I ween.
He says, "This frame house makes me sick—
I wish I'd built of good red brick."

A comic drawing of the dismayed Jones kicking a frame house to pieces appears in the lower left-hand corner of this card, with the statement, "Jones' house was a bad investment. Deteriorated. Make your home your one best investment. Red brick don't deteriorate. 'Nuf Sed.'"

Brick men, today, are strong advocates of general publicity in their respective territories, but few have instituted the time and expense saver of down-town offices for their patrons.

Obviously, it is not in line with up-to-date methods to create diversified demand and then to let a considerable portion of it slide because of the traditionally inaccessible and suburban location of a brick-yard, which increases the odds ten to one that the "prospect" will forget about brick altogether if he does not find the material convenient and ready to be inspected. The approved system is to produce demand and meet it promptly with facilities that will satisfy the customer that you mean business and that your product is best.

The conclusion arrived at by the officers of the Louisville Company was that a convenient display room must be established, where the "prospect" could drop in any time that he was down-town and be satisfied as to the merits of brick. Why shouldn't the brick manufacturer have a conveniently-located down-town demonstration quarters for the sale of his product just like a paint manufacturer, an automobile maker, or any other producer who deals with the consumer?

Accordingly, the company secured quarters on the fourteenth floor of the Lincoln Bank Building, on the northwest corner of Fourth avenue and Market street, in the heart of that section of the business district of the Gateway City where contractors, architects and prospective builders are most likely to congregate. The down-town office has been equipped with samples of every grade of red brick on the market, and an extensive assortment of fancy tiles and enameled brick for interior and exterior decoration, to prove to the prospect that his structural decorations could be contrived as beautifully from brick as from any other material.

The office was further equipped with statistics proving the durability of brick, its facility for lowering fire-risk and general tendency toward producing a handsome and substantial appearance. As a matter of fact, when once a prospective customer stepped in to be shown the merits of brick there was no chance for him to depart unconvinced that he had found the right stuff. Donald McDonald, Jr., son of a director in the company and a student of building problems, was installed as manager of the shopping district headquarters.

The retail offices of the Hydraulic Brick Co., in Louisville, have become a mecca for every structural expert, contractor and prospective builder in the city. The plan has worked with notable success. The offices of the Builders' Exchange occupy the tenth floor of the same building and there are architects to the right of them and architects to the left of them. The pre-eminent feature of accessibility for people who are down-town with building notions in their heads remains, and the supplementary feature of a retail store to aid in general publicity work is established as a *sine qua non* in the conduct of a modern brick business.

CANADA'S SEWER PIPE PLANTS.

In mentioning the opening of the Alberta sewer pipe plant at East Calgary, Alberta, Can., through a typographical error the statement was made that this was the first sewer plant to be established in Canada, whereas, it should have read the first one to be established in that locality. It is a well known fact that Canada has several extensive sewer pipe industries, one of which has been in operation in Hamilton, Ont., and engaged in the making of salt glazed sewer pipe for the past fifty years. The Standard Drain Pipe Co. has been engaged in the sewer pipe business for twenty-six years and operates two large plants, one in Nova Scotia and the other in St. Johns, P. Q.

WHITE SOX BUILDING.

Realizing the strong demand for an exposition building of size sufficient to accommodate the many conventions and other great gatherings brought to the City of Chicago, the Chicago Association of Commerce has effected plans for the erection of a structure of that type, at an estimated cost of \$2,500,000. It is proposed to erect the structure on Wentworth Ave., between 35th and Shields Ave. just east of the White Sox Ball Park. The building will be of fireproof construction throughout of steel, with pressed brick, tile and terra cotta for the exterior facing. The structure will be known as the White Sox Exposition Building.

PARKER-LOHMAN PLANT.

About five miles from Saginaw, Mich., is located the plant of the Parker-Lohman Brick & Tile Co. There, Mr. Parker, Sr., who is 80 years of age, has been making brick for more than 40 years, in the old-fashioned way, using tempering wheels to prepare the clay for the molders.

Oftentimes he has seen the result of several days' work ruined by pouring rains, but he was not a "quitter." Not



Mr. Parker, Sr. Still Cutting Brick After 40 Years' Practice.

he! He waited until the sunshine dried up the yard, then he cleaned it up and went at it again. Later, as the business increased, modern machinery was installed, including a Brewer machine for making brick and tile.

The clay, of which there is an abundance, is sufficiently moist as it comes from the bank to make stiff-mud brick or tile. The goods are hacked on cars and dried in a 4-tunnel "Standard Dryer," which works to perfection.

This company also makes soft-mud brick on a "Monarch" machine, of 30,000 capacity. The clay is hauled in dump-carts, two uncommonly wise horses doing the work. They pull up the loaded carts, back up to the machine and return to the clay bank without a driver. When the carts are a little too heavily loaded the horses stop on the way up to the plant and rest, then they go on again—that's "Horse-sense."

A BEEHIVE OF INDUSTRY.

There is no greater beehive of industry in the brick business than the plant of the Corry Brick & Tile Co., at Corry, Pa. Possessing eighty acres of valuable clay lands and located on the Pennsylvania, Bessemer and Erie Railroads, the company occupies a position that might well be envied by other similar concerns.

The brick and tile of this company are made from shale procured on their property, near at hand. It is hauled in steel cars by cable from the banks to the plant.

The engine and boiler room of this plant occupies a site measuring 44 by 64 feet. The machinery building is 40 by 100 feet and the dryer measures 80 by 120 feet.

The nine-foot Phillips-McLaren dry pans, are in use here. The piano-wire screen is the product of the Ohio Ceramic Engineering Co., of Cleveland, O.

The clay when molded is in the stiff mud state, and is tempered with water, the horizontal pug mill and brick, machine with a capacity of one hundred thousand brick per day being the product of the E. M. Fillse Co.

The 225 iron dry cars, with a capacity of 500 brick each, were made by the Ohio Ceramic Engineering Co. The fourteen-track dryer is constructed of brick and steel, the plans having been drawn by the company to fill its particular requirements and has a capacity of 112,000 brick. The dryer is heated by steam, about thirty hours being required for drying the brick.

This kiln battery is composed of six Yates patent down-draft kilns, 80 feet in length and 20 feet wide, outside measurement, there being 26 furnaces to each kiln. Coal is used for both fuel and water smoking.

The power for the operation of the plant is obtained from one 350-h. p. steam engine of the Erie pattern, and two horizontal 100-h. p. boilers.

The product of this company consists of building and paving brick and floor tile. The plant is operated steadily throughout the year, and the business for 1911 proved to be a record breaker. The company started in business in 1908 and every year improvements have been made with a view of increasing the capacity of the plant.

The officers of the company are President George W. Dunham; vice president, W. M. Lindsey; secretary-treasurer, P. J. Hazeltine, and general manager, D. Warren DeRosay.

SUCCESSFUL RESULTS OF TESTS.

The Algona Brick & Tile Co., Algona, Ia., have received flattering reports as a result of the tests of its building block, recently conducted at the laboratory of Ames College. The test shows that the block crushed at 56,500 lbs., 2,180 lbs. to the inch, or 41.8 tons to the square foot. Another sample required a pressure of 73,000 lbs. to crush. Placed in a wall it is doubtful if any of these block will be required to carry any such a load as those to which the samples were subjected, which leads the company to believe they have a building block as good for building purposes as any made.



Vogt Kiln, In Course of Construction at Parker Lohman Plant.

The Sutherlin Brick & Tile Mfg. Co., has been organized with a capital stock of \$5,000 at Sutherlin, Ore.

The Coffeyville (Kas.) Brick Co., have secured a contract to furnish brick for the new depot at Kansas City. This order will keep their plant going for some time.



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EDITORIAL COMMENT.

Now that eleven months of the year have passed, the story of business achievement in clay manufacturing for the year is fairly well written, although the month of December may bring to light more or less business for the coming year. While there has been no pronounced business boom it may be possible that 1911 was a normal year, while the preceding year of prosperity was an abnormally active one. The general business of the country tends toward a marked improvement, and there seems to be more of an inclination to meet the situation as it is—make the best of it, and plan optimistically for a brighter and more prosperous 1912. While the market conditions in various lines of clay building material are not changed to any extent, the prospects point to a larger demand, and consequent increase in price for the early spring building season.

The Fire Prevention Congress which was recently held in St. Paul, Minn., dwelt more particularly on means for preventing fires from getting started, rather than the more effective method of building fireproof structures. Most cities are awakening to the fact that the most and best effective means of fire prevention is to build fireproof buildings with hollow terra cotta tile walls, which absolutely preclude the possibility of flames spreading in case the inflammable contents of the rooms should catch fire. This appeals to sensible people as the only safe and sure fire prevention worth while.

Figures in the report of the City Club on housing conditions in Chicago show that the cost of a brick cottage would be only \$350 more than a frame and a two-story brick building would cost \$3,100, an increase of only \$700 over the cost of a two-story brick. Other items of expense,

such as maintenance, repairs, etc., show a corresponding decrease in cost. In the matter of fire insurance alone, there was shown a difference of over half, the rate being 50 cents on frame buildings, while the rate on brick buildings was only 20 cents.

We wish to call your attention to the official announcement of the 26th Annual Convention of the National Brick Manufacturers' Association, which appears in this issue. The attendance at this convention, as well as at the conventions of the National Paving Brick Manufacturers Association, the Building Brick Association and the American Ceramic Society, which will be held at the same time, will without doubt be record breaking, as they will be held the same week as the Clay Products Exposition. Such a variety of attractions cannot fail to bring together the greatest gathering ever known of those interested in the clay industry.

"THE CITY FIREPROOF."

It is encouraging to note that the movement for fireproof construction is not confined to our own shores but is widespread and is one of the "live subjects" of the day in many countries. "Building," published at Sydney, Australia, has the following to say on the subject:

"The 'city beautiful' is less vital than the 'city safe.' Let us first of all see that our people live and work under adequate protection for their lives and persons.

"Australia has not yet experienced a holocaust of the kind which has impelled the acceptance of this doctrine in the principal cities of America.

"Our fires to the present have been puny by comparison, but it is more good fortune than otherwise that a whole block in Sydney City has not been swept away with a terrible human toll. We are not among those who proclaim the limitation of a city's commercial growth in accordance with the out-of-date manner of fire-fighting appliance employed. Neither do we advocate the banning of skyscrapers because a fire chief should prove that his hose lines are sufficiently long. What is necessary is that the building be comprised of fireproof materials, also that our fire appliances be brought right up to modern pitch.

"It is chiefly necessary that the injunctions with respect to fireproof construction should be expressed in the building regulations of our cities and our towns. The fire that recently occurred in Castlereagh-street, Sydney, might have easily engulfed a block of buildings, and in this instance it is significant to note that notwithstanding the seriousness of the blaze, the fireproof girders of the affected building are standing today."

DELIVER THE GOODS.

A brick manufacturer in Seguin, Tex., writes us as follows: "I am receiving the several answers from my advertisement, which you have forwarded to me, and which show that 'Brick and Clay Record' 'delivers the goods.' I have had the same ad in '_____' and have not even received acknowledgment of receipt of the order."

This is only one example of many letters which we receive showing that the Classified Department of "Brick and Clay Record" *brings results*. It has proven to be the CLEARING HOUSE OF THE CLAY INDUSTRY, and has been the means of connecting buyers and sellers in a most effective way; also in finding employes for brick and tile works, and for finding positions for disengaged clayworkers. If you have anything to sell, or if you want anything in the line of clayworking equipment try a little ad in "Brick and Clay Record."

OFFICIAL ANNOUNCEMENT.**Twenty-sixth Annual Convention of the National Brick Manufacturers' Association to be Held in Chicago, Ill., March 6-9, 1912.**

To members of the N. B. M. A.: At our last convention at Louisville, it was agreed that if a National Clay Products Exposition was held in Chicago the following winter, we would hold our twenty-sixth annual convention there at the same time. The Clay Products Show will take place March 7 to 12 next. The great Chicago Coliseum has been leased for the occasion, and it is anticipated that it will be an exhibition which will reflect credit upon the entire clay industries of the country and prove a source of interest and profit to every clayworker in the land, and hence will insure the largest attendance in the history of our organization. Consequently, it has been decided to hold our twenty-sixth annual convention in Chicago, March 6 to 9, 1912.

Hotel Annex Headquarters.

Owing to its proximity to the Coliseum, its immense capacity, and the splendid facilities it affords, Hotel Annex has been selected as headquarters during the convention and exposition. All convention sessions and functions will be held in the Annex Hotel. Its numerous convention halls, beautiful banquet and reception rooms, all of which will be at the disposal of the Association, will afford unexcelled facilities. The Annex Hotel is one of the largest and finest hotels in America, and will comfortably accommodate our entire membership. If, as it is hoped, the attendance is double that of previous conventions, all who attend may find satisfactory accommodations under its roof, and those desiring luxurious quarters for entertainment purposes, etc., will have no fault to find with the service, which is par excellence in every respect. The ladies, particularly, will be delighted with the parlors, cafes, library and lounging rooms all of which are elegantly appointed.

Convention Sessions.

As usual, the N. B. M. A. sessions will begin Wednesday, March 6, at 2:00 P. M. Succeeding sessions will be held from 9:30 A. M. until 2:00 P. M., on Thursday, Friday and Saturday. By holding one session a day only, the members will be given ample time and opportunity for visiting the Clay Products Exposition, and indulging in sight seeing trips, as suits their individual fancy. A series of able papers will be presented and the program of events which will provide for a busy and profitable week for all who attend, will be announced in due time.

The National Paving Brick Manufacturers' Association will meet at the same time and place. Their first session will be held in Hotel Annex, Monday, March 4, at 9:00 A. M. For program of full particulars, those interested should communicate with Will P. Blair, secretary, 824 Board of Locomotive Engineers Building, Cleveland, Ohio.

The American Ceramic Society, too, will meet the same week, as in former years, beginning their sessions Monday, A. M., March 4. Prof. Edward Orton, Jr., secretary, Columbus, Ohio, will give full particulars as soon as he has completed the preliminary arrangements and the program.

The Building Brick Association of America will hold its regular annual meeting in the Assembly Room of the Annex, Wednesday, March 6, at 9:30 A. M. The general publicity meeting will be held Thursday at 9:00 A. M., in the main Convention Hall. Secretary, J. Parker B. Fiske, Flatiron Building, New York City, will be pleased to correspond with those desiring further information in regard to the aims and work of this, our publicity organization.

All other allied organizations, whether manufacturers of or dealers in clay products of any sort or character, are cordially invited to hold meetings during the Exposition period, and ample accommodations will be afforded each and all who

will do so. The executive officers are requested to communicate with Secretary Randall relative to time of meetings, etc., in order to avoid the interference of one organization with another.

Our members are invited to suggest topics for discussion and subjects for formal papers touching on various important phases of the particular branch of the business in which they are interested. Those desiring information as to the requisites for membership in the N. B. M. A. or other particulars as to the convention or exhibition are requested to address the Secretary at Indianapolis.

The Executive Committee.

Theo. A. Randall, Secretary. Chas. M. Crook, President.

BRICK WORK POPULAR WITH MAGAZINES.

It ought to be an encouragement to those who believe in publicity for brick that the monthly magazines are finding brickwork a popular subject for exploitation, says the weekly bulletin of the B. B. A. It further states: "You may have observed that a number of them have used brickwork on their front covers in a decorative way. We wish to call your attention particularly to the fact that advertisers are also using brick work as a background for their story. We refer you to the back cover of the 'Saturday Evening Post,' of October 21st, and back cover of 'Everybody's Magazine,' for November. Also back covers of some of the magazines of less importance recently published. The fact that the Dental Cream advertisement of Colgate & Co. is in the form of a tablet with a background of brick work covering the entire page is in itself evidence of the increasing popularity of brick.

"You may also have noticed the advertisement of the Hole Proof Hoisery Co., consisting of a brick wall with a young man and a young woman sitting side by side dangling their feet. The brick wall forms the background for the whole picture.

"The monthly magazines are simply mirrors of public taste and sentiment. The fact that they are using brickwork is an evidence that brickwork is beginning to interest the public in a way which it never did before. The B. B. A. of A. can very properly claim the credit for a great deal of this increased popularity of brick. Moral: It Pays to Advertise.

THOUSAND DOLLAR PRIZE STORY.

The introduction of business fiction is a modern development in literature and "Brick and Clay Record" has secured a splendid serial, "The Boss and the Business," written by one of the most prominent business fiction writers in the country, Daniel Vincent Casey. It is a business story of the clay industry, true to life, telling of the troubles and progress of a clay working enterprise. It is a real story of real business, full to the brim of things which happen "so fast that one does not stop to eat until the story is finished." The first installment of this story will appear in the December 15th number. Do not miss it.

TILE DEALERS MEETING.

Members of the Board of Directors of the central district and Mantel & Tile Dealers' Association met in Milwaukee, Wis., November 18th, it being their regular quarterly meeting. The district is part of the Interstate Mantel & Tile Dealers' Association of the United States. It contains the following states: Illinois, Iowa, Michigan, Ohio, Minnesota and Wisconsin. The Board of Directors are Bert Moore, St. Paul, Minn.; Mr. William Fritz, Peoria, Ill.; H. B. Stewart, Waterloo, Ia.; W. H. Lauder, Milwaukee, Wis.



WE KNOW IT HURTS.

We have just received a letter from a prominent cement tile company at Tracy, Minn., in which they order their subscription discontinued, and take exception to the various articles and cartoons which we have published relating to the unsuitability of cement for the manufacture of agricultural drain tile. Among other things they say:

"We would like to know if this brilliant cartoon, which appeared in your November 1st issue, is taken from specific actual test or whether it is merely an offspring of the imagination."

"We also notice on the opposite page, an article on the disintegrating effect of alkali salts on cement tile. We have a cement tile that has been standing in a solution of one pound of alkali salt to a gallon of water. It has been there since April, exposed to the air, and is not the least bit affected by this solution."

We, of course, cannot blame any cement tile company for feeling somewhat hurt at some of the articles which have appeared in "Brick and Clay Record," but nevertheless we shall stand by our editorial statements on this question and continue to assert that cement is unsuitable for the manufacture of drain tile. It has been amply demonstrated that the cement in such tile is soluble in water through the action of seepage and that such tile will disintegrate under the action of water, the length of time required for this disintegration depending upon the character of the cement from which the tile is made. We also assert that there can be no possible uniformity in cement tile made on a commercial basis.

As to the effect of alkali, we simply refer inquirers to the elaborate tests and experiments made by the Montana Agricultural Experiment Station and by others interested in the subject.

HARD VS. SOFT TILE.

We publish the following question and answer, which appeared in the "Michigan Farmer," thinking it might be of interest to our readers:

"A few words in regard to tile drainage. Several in this vicinity claim that soft-burnt tile are as good, if not better, than hard-burnt. They claim that they absorb more water. What do you say? Is it a good plan to cover the tile with straw to prevent the loose dirt from entering the joints?"

"There is no difference in the immediate results secured from the use of hard or soft burnt tile in the laying of tile drains since the water enters the tile at the joint rather than by peneration, even where soft tile is used. There is no object in covering the tile with straw or any other material in ordinary soils if they are properly laid, the joints being made as close as possible, especially at the top. If properly laid to grade they will not fill with sediment, but if unevenly laid there will be trouble from this cause no matter what precaution may be taken in laying them; hence, the grade stakes in the tile drain should be carefully marked and the tile should be so laid as to have no depressions in the drains, causing them to fill up with sediment."

THE SAC COUNTY HOODOO.

Mention Ditch No. 29 Sac County, Iowa, to a drain tile man, and he will hold up his hands in "holy horror." There seems to have been some perverse and malignant spirit in charge of that ditch operation, causing all kinds of trouble and loss, and there have been all kinds of mis-statements regarding the various tile failures which have occurred there.

One of these mis-statements was the information given us that a line of 36-inch drain tile, furnished by the Evens & Howard Fire Brick Co., of St. Louis, was included in one of the failures. The information was incorrect, as that company furnished no drain tile for that ditch.

We have a considerable fund of information concerning the various failures on Ditch No. 29, and we propose at a later date, after additional investigations have been made, to publish an article giving more complete particulars.

TILE DRAINS FOR ROADWAYS.

In the report on highway construction recently issued by W. A. McLean, the Provincial Engineer of Highways in Canada, there appeared the following in reference to the specifications for draining roadways:

"Tile drains, where required to remove an excess of sub-soil water, to tap springs, to effectively dispose of surface water, to protect hills or road intersections, shall in general be placed along the side of the roadway, under the open drain or gutter, and shall be not less than five inches in diameter. The tile are to be placed in an eight-inch trench, the bottom of the trench to be 26 inches below the sub-grade of the roadway. They are to be uniformly and evenly laid with a fall of not less than three inches in one hundred feet to a proper outlet, and with ends closely abutting. All tile used shall be of the best quality of clay, manufactured expressly for drain purposes, in lengths not less than one foot, and of uniform diameter throughout. Earth excavated in the laying of these drains shall be returned to the trench, being consolidated on hills or slopes if considered necessary by the engineer, to prevent its being washed out, and in every case so disposed of as not to interfere with surface drainage. When the bottom of the trench is in quicksand, satisfactory means are to be used to keep the tile in a true line, and free from sediment."

HEARING FOR DRAIN TILE RATES.

In response to petitions the Railroad Commission has issued notice of hearing to consider a readjustment of the rates, in Texas, on drain tile, including hollow terra cotta tile in car loads, with a minimum of 24,000 pounds. The proposed tariff reaches a maximum at 500 miles, carrying a rate of 17 cents for both single and joint hauls.

The relative economy between clay and concrete pipe was tried out recently in Kansas City, by the Board of Public Works. The price of clay tile was \$10.00 lower than the concrete and the contract was awarded to the clay pipe manufacturer.

A DAY'S DITCHING.

I had been interested in ditching machines for some time but had never been able to see one in actual operation in the field. The opportunity came in August.

Mr. P. G. Jacobson, who owns and operates a Hovland Tile Ditching Machine, met me at Dawson, Minn., and we drove out about five miles to where his machine was working.

The machine is built on two frames both running on web-creepers. The first frame carries a three cylinder 45 h. p.



Ditcher with Wood Frame Mounted on Skids.

gasoline engine, and the machinery for propelling both machines.

The power is belted back to the second frame for running the digging chain and dirt conveyor. In the ditch, following the digging boom, is a curbing to protect the bottom man in case of caving banks. An ingenious device on the traction frame applies the full power of the engine alternately to moving first the web-creepers and then the curbing.

The second frame was also on web-creepers but no power was applied to them. The digging was done by an endless chain revolving around a 15 ft. digging boom giving a digging depth of 12 feet. Shovels with sharp points alternating with flat-faced scrapers or reamers are fastened to the chain. The shovels loosen the dirt, the reamers carry it up to the revolving apron that deposits it along the side of the ditch.

The machine was working through a stubble field, and digging a ditch about 6 feet deep and 17 inches wide. The conditions were quite favorable, as the season had been a dry one. Several times in the day's work we encountered quicksand but there was no water in it and quicksand without water makes easy digging.

There were four men working about the machine. One at the engine, one at the end of the machine, one in the ditch and one handing down tile. The engineer spent only about one-third of his time at the engine. The balance was given to helping the others.

The tile laying was kept close up to the digging and the level was measured from the tile when laid and bedded. The depth that the machine dug was changed as found necessary when they found the tile running too high or too low. I spent most of the day at work with the men. At one time, I saw the digging boom acting very queerly and thought it was going to pieces. The man in charge did not stop the machine but watched it closely and ran to the opposite side and reached in to where the digging chain delivered the dirt, and brought out a boulder about as large as his head. He had to go back to the end of the machine and I took his place taking out about a dozen of varying sizes. The machine went through it all without being stopped.

The machine was stopped only four times that day. Once

for the noon hour, once for about one hour waiting for tile, once to replace some nuts that had been lost off the digging chain, and once to repair the drive pulley on the traction. The loss was about two hours of working time. Even with this loss of time 1,200 feet of 8-inch tile was laid, that day, by four men with the use of the machine.

The difference in cost will allow for many days of breakdowns. The desire to crowd a machine to the limit means that it will often be crowded beyond the limit of its capacity. To make a fair comparison of cost between hand and machine work, only the delays due to faulty construction, wear and crowding of the machine should be considered. Delays from caving banks, rocks and hard pan, quicksand, etc., will all delay hand labor as much, if not more, than the machine.

By traveling a part of that night, I was able to get an early start from Renville the next morning with C. F. Clay, to see his machine work. His machine is also "A Hovland Tile Ditching Machine." The traction part was the same as on the Jacobson machine, but the ditcher frame was of wood and mounted on skids instead of the web-creeper.

They were working on a ditch about 7 feet deep and 17 inches wide. The soil was about the same as I had seen the day before, the conditions being equally favorable. He keeps five men at work on the machine, the engineer spending all of his time at the engine. The method of keeping the machine digging to grade differed from that used at the Jacobson machine. The machine at times was working 200 feet ahead of the tile laying.

When the men started to lay tile I was surprised to see how little they had to cut away or fill in to keep the level. A string was stretched from target to target directly over the ditch so that the depth of the tile was easily and accurately measured.

I did not spend the whole of the day with the machine, but while I was there the machine was not stopped at any time. The crew worked only nine hours and laid 900 feet of tile that day.

On both machines, the crews are in charge. The owners both being engaged in other work, do not spend much time



The Hovland Ditcher on the Job.

with the machines. I think five men are better than four, as it allows for emergencies and insures better care of the engine.

On the clay machine, the digging chain had been allowed to run down. Many of the shovels were broken off and some of the reamers were broken. As a result the digging could not keep up with the progress of the machine. Frequently the power would be thrown off from the web-creepers to allow the digging chain to catch up.

A Ditcher.

REPORT OF GEOLOGICAL SURVEY.

Economic geology is a science which is frequently invoked in determining the commercial availability of structural materials. No one better than the trained geologist can determine from its age, structure, and composition whether a deposit of rock or clay, for instance, is capable of being put to a successful commercial use. In addition to certain specific geologic investigations to determine the value of raw building materials the geologists of the United States Geological Survey, as incidental to their other work, which carries them to all parts of the United States, are constantly observing and reporting on deposits of such materials which they may chance to encounter.

The survey has just published an advance chapter from Contributions to Economic Geology, 1910, containing several such reports on structural materials in many parts of the country.

Description of Clay Beds in Colorado and Texas.

The chapter also contains a report by G. B. Richardson on a promising clay deposit near Calhan, El Paso County, Colo. Tests made by the Bureau of Standards show that the Calhan deposits are clays of good grade adapted for various purposes. Mr. Richardson reports that the clay is used to considerable extent for lining the insides of furnaces, making retorts, firebrick for buildings, sewer pipe, etc. The tests recorded in the report also suggest other uses for the clay.

Another report is a discussion by E. W. Shaw of the clay resources of the Murphysboro quadrangle, Illinois, including parts of Jackson and Perry Counties. After describing their structure, geology, and present development Mr. Shaw states that the extensive deposits of clay in this region and the considerable demand for clay products might warrant more extensive exploitation.

A further contribution to the chapter is entitled "Notes on Some Texas Clays," by Alexander Deussen. Mr. Deussen recently collected 25 samples of clay from the central Coastal Plain region of Texas—Travis, Lee, Bastrop, Burleson, Washington, and Fayette Counties—and tests were made of the physical properties and burning behavior of the clays. The complete results of these tests are not yet available, but although it is now believed that not many of the deposits can be used in the manufacture of clay products of high grade, yet they may afford considerable material to mix with other clays and thus prove profitable to work. It is undoubtedly true, according to Mr. Deussen, that some of the clays are high grade and it is believed that in experienced hands, with plants properly located, the deposits can be worked at a profit and merit additional attention.

BUSINESS ACTIVITY INCREASING.

A report from the Frost Mfg. Co., of Galesburg, Ill., tells us that their business has increased fifty per cent recently, and that prospects are most encouraging. This condition applies not only to their business in dry pans but also in boilers and engines.

This company has recently made a number of important sales of Frost engines to clay working plants, evidencing the popularity of the Frost product.

PURCHASES EXTENSIVE LANDS.

Announcement has been made that the Harbison-Walker Refractories Co. has purchased 16,400 acres of clay deposits in Morgan and Mineral counties in West Virginia. The deal was made through John C. Berry, of Wheeling, W. Va., who acted as special commissioner in the matter.

WARDROP, HEAD OF SALES-AGENCY.

J. W. Wardrop, one of the best known men in the building trades lines in Western Pennsylvania, has become associated with the United States Sewer Pipe Co., whose general offices are in the Frick Bldg., Pittsburgh, and which corporation is an allied interest of the Pittsburgh-Buffalo Co., the largest coal and coke concern in that district, with possibly one or two exceptions. The company will hereafter do a more extensive business in building brick and the manufacture of sewer pipe. Agencies for the sale of the products of the United States Co. are being established throughout the country, as fast as opportunity will permit. These agencies will be under the direct supervision of Mr. Wardrop. The plants of the company are located at Johnetta, Pa., and Devonshire. Mottled and buff brick are the principal brick produced by the company.

AN IMPORTANT MERGER.

The Brown Instrument Co., Philadelphia, Pa., has secured control of the Keystone Electrical Instrument Co., of Philadelphia. With these two companies joined, the Brown Instrument Co. feel that it can manufacture instruments much more efficiently and will be able to harden and forge the magnets more rapidly. This places the Brown Instrument Co. in a better position to manufacture and market pyrometers than ever before.

TEXAS PLANT DESTROYED BY FIRE.

A fire at the plant of the Atlas Pressed Brick Company, Ferris, Texas, on Nov. 13th, caused the total destruction of the main plant, causing a loss of \$10,000. The fire was caused by an over heated bearing in the line shaft in the engine room. The largest item of loss is the machinery. The Atlas plant was the first one erected at Ferris.

PUBLICITY METHODS.

It is encouraging to note the general adoption throughout the country, among clay manufacturers, of some sort of systematic advertising in the local papers.

In a recent issue of the "Augusta (Ga.) Chronicle," and also in the "Augusta Sunday Herald," appeared full-page advertisements of the product of the Georgia-Carolina Brick Co., of Augusta, of which H. H. Stafford is the president. The advertisement is written in an attractive, "catchy" manner in large type, so that "those who run may read." The heading of one is "Why the wise man always builds his home of brick," giving 6 of 60 good reasons for using brick instead of other material, which are as follows:

"Because: Homes built of brick save \$100 or more every 3 years in painting bills.

"Because: The insurance on brick homes is only \$10.00 per \$1,000 for 3 years, against \$13.00 for frame houses.

"Because: Insurance of furniture in a brick house costs proportionately the same as the insurance on the house.

"Because: A home constructed of brick is far more durable, outlasting wood houses by a great many years.

"Because: Brick houses need no repairing or patching.

"Because: A brick home increases in value with age, while frame decreases. This is the rule, not the exception."

The Georgia-Carolina Co. does a big business, having an annual output of about seventy-five million, with excellent facilities for quick shipment. They manufacture red and buff dry pressed brick, and also common building brick.



PRACTICE VS. THEORY.

It is not to be wondered at that with so many varieties of clays, handled in so many diverse ways, and burned in so many different kinds of kilns with varied quantities and kinds of fuel under widely different circumstances in producing many varieties of clay products, that there should be a corresponding difference of opinion as to the proper method of handling these clays. This is more especially noted in regard to the burning process and we are pleased to print the following interesting letter from a practical clay-worker, in which he takes exception to various articles on the "Burning Question," which have appeared in this department. As his deductions seem to be from actual experience they should be of special value. The letter follows:

"Editor of 'Brick and Clay Record': Being a new subscriber to your very interesting journal of clay records, etc., the superintendent's page of 'More Burning Questions' particularly interests me; and noting your editorial, at the head, inviting criticism even to the extent of giving you 'a piece of my mind,' my purpose is to let in a little more light and ventilation on the questions dealt with in your issue of Nov. 1st, taking up the questions in their respective order with all due respect, of course, to the source of information.

"First question, from an Indiana manufacturer: 'I am making a stiff mud shale brick and am troubled with whitewash on the brick. I would be glad to know what to do to overcome this.'

"So would a great many more, the world over, Mr. Indiana Manufacturer. This is a question that disturbs the minds of all clayworkers, from generation to generation, and will continue to do so to the end, in all probability.

"Without repeating here your answer and solution (which can be referred to), I will state, I am at variance with both your cause and remedy. I shall not, however, attempt to discuss the question from a chemical or theoretical point of view, but will rely more particularly on practical experiments and tests, though I do not wish to be misunderstood by our chemical and analytical friends. I appreciate the value very fully of all analytic research, but claim, in this particular instance, it to be more a matter of observation than chemistry. Your reply is more theoretical than practical, and contradictory at that, as you give the cause, then the remedy given contradicts it by saying: 'It often happens that scum appears on the brick on account of the burning process which is caused by sulphuric gases from the coal,' which is only another theory and is only a matter of opinion which is not very substantial; and gets us no nearer the solution of the vexed question.

"My idea, based on careful tests and observation, tells me the whitewash, or scum, as it is ordinarily designated, is not soluble salts, but a very insoluble material and practically speaking, insoluble. What the scum really is. That it does not arise or come directly from the material or clay used, but is a deposit of the impurities of the air in the current of draft, both in the drying room and kiln, but more particularly the latter, especially the continuous kilns (which are the greatest transgressors), has been proved. Where kilns of different con-

struction are used with the same clay, which is the case in many plants, the writer has had experience which very conclusively proves it is not soluble salts in the sense of the term, as used; or, why is it not uniform all over the goods? Why are the ends of the brick, exposed and facing the current, always the most scummed, while the other end or protected parts, are always clear, or practically so? This in itself disposes of the theory that it arises from or out of the material which it is on, proving it to be a deposit from the impurities of the laden air traveling in one direction.

"As a further proof against the soluble salts theory, take a few brick, as the writer has many a time done, as soon as made, cover them over with paper, leaving just sufficient space for the evaporation of the moisture, leaving them thus until thoroughly dry; then burn them in a muffle kiln, or in seggars, well covered, in the ordinary continuous kiln and the adherents to the soluble salts theory will have cause to wonder what has become of the salts; which will be food for reflection. This preventive, which is better than the cure, in the ordinary or literal sense of the term, unfortunately does not apply in this particular case, as the remedy is too expensive for practical purposes. Therefore, your querist from Indiana will, like others, have to content himself with the inevitable. It is a question, I will be bold enough to say, that will outlive all time, as to even partially eliminate it is to dispense with the continuous kiln, which means adding to the cost of the goods, and who is willing to pay for it? This is just as I look at the scum question.

"Second question: Another Indiana querist, a drain tile manufacturer, making building brick, would like to find a cheap method of glazing his brick. He also says his clay will not salt glaze.

"Being an old practitioner in this method of glazing, I can boldly say, I have yet to see the clay that will not salt glaze from the fact that it is not the clay that glazes, but the salt that is first vaporized and afterwards crystallized, making a deposit on whatever it comes in contact with.

"A variation of application is certainly essential with variable refractory elements but to say any clay or stone that will stand the intense heating necessary to vaporize salt will not salt glaze is nonsense. There the whole question of salt glazing is, in a nut shell. In saying this, I am not ignorant of the fact that the use of salt and the necessity of variable methods in using it together with the right principles of kiln construction is little understood. The question is not quite clear, as I read it, or you print it, the querist being a drain tile manufacturer making building brick and wanting a cheap method for glazing his ware. If he means both the brick and drain tile, I should say he would be well advised to abandon the idea of glazing his drain tile, for practical as well as economic reasons, drain tile cannot be too porous if well burned. Glazed brick made from surface clay invariably burns red, and can never be made to take a white or light colored glaze necessary for making them a commercial success. This is a larger question than appears at sight. If the questioner had explained a little more fully what he wanted to know, more could be said

in the shape of advice and information to the point; all that can be said with advantage, under the circumstances, is, if he has only red clay, surface clay, he had best leave glazing alone as there is no cheap method of glazing with pigmentary glazes, none, absolutely none.

"Salt glazing is cheap, certainly, the cheapest method, so far as methods go, but to thoroughly understand it requires a great amount of experience, the want of which has brought many to grief. It is a method where rules of chemistry fail to assist, and so far as it is in use, is a matter of trusting to Providence, by 99 9/10 per cent of clay product burners, and perhaps even more than that. Though saying this, I do not despair; great things will yet be done with salt as a glaze; there is unquestionably a great future for salt glazing, the most durable of glazes.

"Your querist from South Carolina who makes a light color brick, a yellow, is troubled with his brick turning green when exposed to weather, which you say is undoubtedly due to the presence of lime, and recommend the use of barium salts as a preventive. Here again, I find myself at variance with your remedy, the cause I will not dispute, as, technically speaking, lime is an element in all earth, of course, which goes without saying, but I differ with you in the matter of using chemicals. The evil is purely vegetable and the prevention is not a question of chemistry, but of sound judgment, elbow grease, and coal—in other words, practical experience in burning. Thoroughly burn your brick to a point as near vitrification as your clay will stand without checking and you will remove all possible chances of your brick turning green when exposed to weather; it will be at the expense of the light color, though, to some extent.

"The manufacturer of building brick in Pennsylvania's 'burning trouble' appears to me more a question of his burner's need of practical experience, and as you say, he has 'hit the nail on the head,' by saying, it is either the kiln has not draft enough or that the bottom of the kiln is at fault—likely to be too damp. I would add to 'hitting this nail on the head,' by clinching it, by saying it is either one or the other of these two causes, or something else—more probably something else, and that something else, want of thorough practical experience, which is the most essential thing necessary in the most important stage in the manufacture of clay goods—burning—a point nearly all clay manufacturers, for some unaccountable reason, seem either to ignore or fail to grasp.

"I will here say to them that the sooner they realize and admit the fact and set about remedying existing conditions, the better it will be all around. The only way out of the difficulty is to make the burner's position worth the interest it calls for. The position is at present looked upon as the meanest position connected with the industry. This is wrong, radically wrong.

"A skilled burner is worth, in the writer's opinion, any reasonable monetary consideration. He it is that puts the balance on the right side of the ledger, not the general manager, the salesman, or superintendent, for no matter how proficient these gentlemen are, the man that puts the finishing touch on the quality of the goods is the best superintendent, the best salesman, and the best general manager, as without a better class of goods, they cannot beat the other fellow, as the practical burner can.

"Quality is what counts these days, and that is why I say: 'Make the burning job worth ambition and honest effort and results will follow.'

"A Clayworker."

FIRST BRICKMAKERS' STRIKE.

It may be some comfort to the modern brick manufacturer, harassed by the frequent troubles and delays, occasioned by strikes, to know that "the strike" is not a product of recent times, but dates back to ancient days.

The first strike recorded in history was a strike against a cut in piece rates, says Harrington Emerson, in the "Engineering Magazine." He says: "The first strike recorded in history was a strike against a cut in piece rates. 'And the Egyptians made the children of Israel to serve with rigor. And they made their lives bitter with hard bondage, in mortar, and in brick, and in all manner of service. * * * And Moses and Aaron went in and told Pharaoh, 'Let the people go that they may hold a feast.' * * * And the King of Egypt said unto them, 'Wherefore do ye * * * let the people from their work? * * * ye make them rest from their burdens.' And Pharaoh commanded the same day the taskmasters * * * saying, 'Ye shall not more give the people straw to make brick as heretofore. * * * And the tale of the brick which they did make heretofore, ye shall lay upon them; ye shall not diminish aught thereof; for they be idle; therefore they cry, saying, 'Let us go * * * Let there be more work be laid upon the men * * * and let them not regard vain words.' Pharaoh said to the children of Israel, 'Ye are idle, ye are idle; * * * Go therefore now and work; for there shall be no straw given you, yet ye deliver the tale of brick.'" What followed is a matter of history. They walked out and stayed out for 40 years, and then their descendants got other and better jobs."

PECULIAR DAMAGE SUIT.

Mark Semick of Fishkill, N. Y., has brought suit for \$10,000 against the Joseph Belle Isle's brick yard for the loss of his child, whose death was caused by an injury sustained when she was run over by a car loaded with clay which was being taken to the Belle Isle brick plant. The child ran in the middle of the road in front of the horse, the road being a private one belonging to the brick company.

THEY LOSE NO TIME.

While visiting a large clay manufacturing establishment, not long since, we were impressed when the whistle blew for "quitting time," by the celerity with which the workmen dropped their tools, grabbed hats and pails and disappeared as if by magic.

"Do all the workmen drop their tools, the instant the whistle blows?" we asked.

"No, not all," the foreman said. "The more orderly ones have their tools put away before the whistle blows and are ready to run when the summons comes. Quitting time is when most workmen believe in punctuality and give it literal interpretation." Have you ever noticed this?

BENDING SHORT PIECES OF PIPE.

It is very difficult to bend short pieces of threaded pipe without damage to the threads or kinking the pipe. The bend can be easily made in the following manner: Screw an ordinary coupling on each end of the pipe and heat it almost to a white heat. Then cool each end in water, place in a vise, and tighten the jaws just enough to hold it firmly.

Insert an iron bar into each end of the pipe and force the bars in an upward direction and the result will be a smooth bend. If the pipes are too short to be held in the vise without clamping the couplings, use two pieces of flat iron between the couplings.—Popular Mechanics.



THE ROCHESTER ROADFEST.

The cause of good roads received an important boost at Rochester, New York, during the week of November 14th, when 1,400 good roads enthusiasts gathered at the Annual Convention of the American Road Builders' Association.

Every state in the country was well represented at this Good Roads Congress, and also a number of foreign countries. There was three delegates from Australia, and representatives from the Philippine Islands, Germany and elsewhere. Most of those attending were state highway engineers, city engineers, road supervisors, commissioners of public works and road contractors, just the class of people who should be and are most interested in the furthering of the good roads cause.

We are pleased to see that the paving brick interests of the country were largely represented at this convention, and

One of the important features on the program was an address given on the last day of the session by Mr. Blair, which considered the question of paving in general with special consideration to the use of brick.

A large number of interesting addresses were given which will add much to good roads literature. The question of maintenance was one of the most important topics discussed and the point brought out in the discussions which treated with this subject, was that this should be the most important argument in favor of brick paved roads, streets and highways for the cost of maintenance is then practically eliminated. C. Gordon Reel, New York Superintendent of highways, in his address, among other things, said: "Our state has spent \$3,000,000 for maintenance of state, county and township roads and with the great extension of state and county roads and considering their rapid deterioration



Brick Paved Highways Rob Farm Life of Its Chief Terror—Bad Roads.

a considerable number of paving brick manufacturers attended personally.

A creditable exhibit was shown by the National Paving Brick Manufacturers' Association, and also by the Dunn Wire-Cut-Lug Brick Co. and the companies manufacturing that product under the Dunn patents. A novel and clever idea, for which Mr. T. B. Dunn is responsible, was the giving away of carnations to the visiting delegates. The carnations proved to be so popular that before Mr. Dunn got through he had to give away 2,200 of these little flowers. The register at the brick exhibition showed 1,013 names. Mr. Dunn was assisted by W. F. Blackburn of Paris, Illinois. Among others present were Mr. G. H. Francis, manager of the United Brick Co., Conneaut, Ohio; Messrs. F. H. Snyder and F. L. Stowell of the Sterling Brick Co., Olean, New York; D. W. DeRosay of the Corry Brick & Tile Co., Corry, Pa.; and Clyde C. Murray, secretary of the Reynoldsville Brick & Tile Co., Reynoldsville, Pa., all of these concerns being licensees under the Dunn patents. Mr. W. P. Blair, secretary of the National Paving Brick Manufacturers' Association, was present, and also assistant secretary, Mr. McDonald.

as now built, the amount the state will have to contribute will reach ten million dollars a year upon the completion of the contemplated system.

"If the present commission is to best serve the interests of the people in the state, it must be empowered to build roads where they are needed and of a kind and at a cost which comport with the local requirements."

REHABILITATION OF NATIONAL ROAD.

An article which appeared in our September 15th issue, under the title "A National Brick Road," caused considerable attention and comment, and was reprinted in several municipal journals. It appears, however, that a surprisingly large number of people were unaware of the existence of "The Old National Road," and as we have received many inquiries as to its history, we take pleasure in publishing an article on the subject which appeared in a recent issue of "Good Roads."

The rehabilitation of this great roadway will mean much to the paving brick manufacturers, if they are active and energetic in promoting their interests in connection with this mammoth improvement. If only a por-

tion of this vast roadway should be paved with brick, it would afford a market for a large amount of paving brick, but it will need concerted action and persistent effort on the part of the paving brick manufacturers to secure their share of the "plums."

There is, undoubtedly, a growing sentiment throughout the country in favor of brick for paving country roads, and after repeated trials with other road surfacing, the consensus of opinion is in favor of brick, the only drawback being the slight increase in the original cost of installing brick paving. This is overbalanced, however, by the small expense for maintaining brick paved roadways, properly laid. Automobilists are enthusiastically in favor of brick roads, on account of the freedom from dust and grit common to the macadamized road. The article follows:

"The old National road, once one of the most famous and indispensable internal improvements ever made by the Government of the United States, and the only road of its kind constructed by Congress, is to be thoroughly rehabilitated and put in condition for vehicular travel. The recent letting of contracts by the Pennsylvania State Highway Department for its resurfacing and reconstruction in part, again focuses public attention upon it. There are still living, thousands of persons who remember this American Appian Way in its prime, prior to the Civil war, when it played a most important part in the settlement and upbuilding of the great western country beyond the Alleghenies. No other agency, save railroads, has done so much to promote the prosperity of that vast domain.

"It is the purpose of the Pennsylvania Highway Com. E. M. Bigelow to connect those isolated sections of the road rebuilt in 1907 and 1909 when \$250,000 was appropriated for the improvement of the road. The bids for this year's work were, in three sections, covering 12 miles in all, including sections 8 and 10, the former near the County Home road, and the latter in Somerset county, extending from Addison to the state line. The sum of \$300,000 is available for the work, which is already under way. That the rehabilitation of the entire road will be complete is assured by the promise of the Maryland highway authorities that they will improve their portion of it.

"According to Chief Engineer Samuel D. Foster, of the Pennsylvania Highway Department, the resurfacing will be of various kinds, conforming to the nature of the different sections of the country traversed, as well as to the character of the travel. Some parts are to be macadamized; some paved with brick, and some with other materials. Particular attention will be paid to drainage and the repair of bridges, culverts and embankments.

"The National or Cumberland road—or pike as it was popularly called—was well built under excellent specifications which prescribed a durable foundation. That the work was of a high order is attested by the fact that after ninety years of continuous travel the principal work required is resurfacing. The original highway was built of telford or native stone, mostly limestone, and surfaced with crushed stone of the same kind. In some parts boulders as large as three feet across were used. The work was begun in 1811, just a century ago, under the direction of Brigadier-General Gratiot, of the Engineer Corps, U. S. A.

"The road was opened for traffic ten years later and the cost exceeded \$1,000,000. Until 1834, the Government maintained control of the highway, but in that year surrendered it to the states, with the proviso that it could resume control at any time when such action might become advisable.

"The portion of the road built by the Government is 130 miles long and extends from Cumberland, Md., to Wheeling, W. Va. The original intention of Congress was to build to St. Louis, for the express purpose of affording an easy route to the rapidly growing western country; but railroads appearing on the scene a decade after the completion of the Cumberland-Wheeling link, the magnificent project was abandoned. As an excellent road existed at the time between Cumberland and Washington this section did not need to be built. The road, however, was actually extended by the states of Ohio, Indiana and Illinois through their respective domains.

"The construction of the National road was authorized by an act of April 30, 1802, admitting Ohio to the Union, 5 per cent of the proceeds of public land sales in that state being set aside for the work. The acts admitting Indiana, Illinois and Missouri contained provisions essentially similar. As early as 1797 the project had been proposed, Henry Clay being among its most zealous advocates. At Elm Grove, W. Va., on the line of the road, stands a memorial to his efficient efforts in its behalf.

"In this day of ever-increasing motor travel the improvement of this great highway will be appreciated by sightseers and tourists. Not only does the road pass through some of the most beautiful stretches of country in the Atlantic states, but its every foot teems with rich historical associations intimately connected with the Revolution and with some of the most celebrated figures in American history. Washington traveled over the route when it was Nemacolin's trail, and it was the military road over which the ill-starred Braddock advanced toward Fort Duquesne and to his dreadful doom on the banks of the Monongahela, ten miles from the French fort at the "Forks of the Ohio," the site of busy Pittsburg. The battle ground of Great Meadows, the first engagement of the French and Indian war, where Washington fought and won his initial battle, is on the line of the pike, while not far away is the field of Fort Necessity, his second engagement. In the same neighborhood is still to be seen the rock covered grave of Jumonville, the French commander in the Great Meadows fight. In Fayette county may be seen the gristmill once owned by Washington, and the masonry dam he built to impound the water to turn the big wheel that moved the grindstones.

"Quaint old Brownsville, standing where the road reaches the historic Monongahela, is well worth a visit. It is the birthplace of James G. Blaine and Philander C. Knox. Here emigrants for Kentucky and other western parts left the Conestoga wagons and stages and embarked on flat-boats or steamers to go down the Ohio. In its prime, fifty years ago, it is said that the old pike presented an almost continuous procession of Conestoga wagons, other vehicles, emigrants on foot and herds of cattle, mostly bound for the west. All along the route, in fact almost every mile, were taverns, many of them cozy and inviting and bearing strange weird signs or names that suggested the famous inns of England, described by Dickens in the Spectator. Very few of these taverns now exist.

"What the road was to the country seventy-five years ago may be imagined when it is stated that it cut by one-half the time of wagon trips from Baltimore to Wheeling, and reduced the freights more than one-half. The time of the mails was reduced even more."

With such a magnificent prospect it would seem every manufacturer of paving brick, along the line, should at

once begin to create local enthusiasm in favor of brick for use on this road project which, without doubt, will eventually result in the repaving of the National Road to its extreme western limit at St. Louis, and will naturally result in many north and south "feed lines" being built also. Already the States of Pennsylvania and Ohio have built hundreds of miles of brick country roads which are a source of pride to the residents of those states, and are models worthy of world-wide notice. The harvest is ripe, it is up to you to do the reaping.

ACTIVE MEASURES TAKEN IN OHIO.

A very important result of the Ohio elections will be the inauguration of a movement in the interests of good roads in the state of Ohio. The State Good Roads Federation made a very aggressive campaign among the delegates to the Constitutional Convention of the state to pledge them to a policy of liberality for paving the Ohio highways on a systematic plan. The movement has the indorsement of Governor Harmon and the state highway department, the purpose being to bring about higher farm values, quicker transportation, better schools and better economic conditions.

The delegates to the coming Constitutional Convention will be called on to adopt a comprehensive campaign in the interests of road improvements and to read this policy into the fundamental law of the state. An inter-county system of roads has been mapped out by the State Good Roads Federation and a state fund is available to assist the various counties in effecting these connections. The system in all cases reaches the county seats and is designed to connect directly with the roads now under construction in the various counties. The State Federation seeks to have the bonds of the state executed so that a fund of \$50,000,000 will be available for good roads during the next 10 years. The bodies allied to the State Good Roads Federation are generally speaking in favor of the paving of these roads with brick. Uniformity is considered necessary and the economic value of brick in such a comprehensive plan of construction is generally recognized.

There was a meeting of good road enthusiasts at the Cleveland Automobile Club rooms, the first of the month, attended by Jesse Taylor, president of the Ohio Good Roads Federation, and Senator W. A. Alsdorf, a prominent member of that organization. County Commissioner Harry Vail addressed the body stating that the first brick roads in Cuyahoga county were laid in 1895 and that today there were hundreds of miles of brick pavements in this county which were giving excellent satisfaction. At the county limits, he stated there was nothing but mud roads. He added that this county had decided that the form of construction, most practical for all purposes, was brick, and that nothing would hereafter be laid excepting that material. A concrete base is in all cases recommended.

INTERNATIONAL HIGHWAY.

The construction of an international highway from Montreal to New York is regarded as an assured fact. The character of the road will be decided upon jointly by the roads branch of the Province of Quebec and by the New York State Road Engineers. It will be completed at latest during 1913.

Mayor Minick of Wichita, Kansas, is against cheap concrete paving material and says he will not vote for the use of this material, unless the contractors guarantee it for 5 years.

A GOOD ROADS FIGHTER.

R. J. Jones, an editor-lawyer of Sebring, O., has established a creditable reputation in the State of Ohio, for his excellent work in the interests of good roads.

When he first came to Sebring from Washington, D. C. ten years ago, having completed a course in law in Washington, D. C., he embarked in the newspaper business and while engaged in this work, had occasion to travel frequently between Alliance and Sebring, and frequently



R. J. Jones, a Booster for Brick Paved Roads.

encountered mud-roads "hub-deep," and one day while "mired" in this mud, he resolved that he would lose no opportunity to interest people along the road in having the highway paved.

Then came the "tug of war." Farmers, in those days, did not have much faith in paved highways, and did not realize the vast benefits which would accrue to them from having paved roads on which to take their produce to market. For three long years, Editor Jones talked, wrote and agitated the good road question, and like most pioneers in any good cause, he did not escape the adverse criticism common to those who take up the cudgel in behalf of public improvement.

However, nothing deterred, he kept on fighting and writing, and finally a bright light dawned on the County Commissioners of Stark and Mahoning Counties and they met together and made arrangements for surveying the Sebring-Alliance Road, and after a few months the contracts were let and the paved road was finally a reality.

Mr. Jones has never ceased in his efforts to boom good roads, and has always been a strong supporter of brick paved country roads, wherever possible. On account of his work for public betterment in his community, Mr. Jones has been selected to hold several political positions and is now being boomed as a candidate for congressional honors from the Eighteenth Congressional District of Ohio. It is Mr. Jones' plan to make "Federal aid for good roads," an issue in the 1912 campaign. As he is a strong booster for brick roads, it will mean a big lift to the paving industry, should he be elected congressman.



GENERAL NEWS OF THE CRAFT.

East Liverpool, O., Nov. 26.—Fall business, with the domestic pottery manufacturers of the United States, is not as heavy this season as orders indicated a year ago. Some manufacturers report their plants working to the limit, while others assert they could take care of more trade without crowding any department. The sale of dinner ware to the large department stores is held down because buyers are unable, in many instances, to get their orders through. Premium business, better known as "scheme" trade, is very good, especially from the Chicago and western territory. It was only a few days ago that a western premium goods jobber placed an order for nearly 750,000 pieces of ware, and bought 60,000 fish and game sets. There is no denying the fact that the general trade will be compelled to order in more liberal quantities during the late months of the year. Buyers have been running close to shore with their orders, with the result that stocks are not very large, and there is little to select from.

It is generally admitted by all domestic pottery manufacturers that the cost of production is materially decreased provided the results obtained through a one-fire process prove successful.

While similar experiments have been made in the West on semi-porcelain hotel ware, nothing of the kind has been attempted on the vitreous porcelain hotel lines. It is also admitted that with the manufacturing of underglaze decorated ware by a one-fire process the business would practically be revolutionized.

The Mayer Pottery Co., of Beaver Falls, Pa., and the Shenango China Co., of New Castle, Pa., the largest producers of general vitreous porcelain hotel ware in the western district have been longing to see the one-fire proposition succeed, and the work now being done in Trenton is receiving keen attention by western manufacturers.

With a capital stock of \$40,000 the Betterware Pottery Co., of Zanesville, O., has begun operating its plant which is the only plant of the kind in the country to be operated entirely by colored people. George S. M. White, of New York, recently arrived in Zanesville to manage the plant, while he has as associates B. J. Howard and Harry G. Hampton. The plant is located on a site overlooking the Muskingum river and is a property that was formerly occupied by the Nielson Pottery Co. It is the largest concern in the North that is owned and managed exclusively by colored men. The company recently received its charter from Columbus, O.

More than ordinary interest is being shown by the manufacturing potters of the United States in the report that will be presented to the next session of Congress by the Special Commission of the Treasury Department, which recently returned from abroad after making a close study of the pottery conditions of foreign countries. That this report will contain many interesting phases of the foreign production of pottery, with relation to the manufacturing of domestic ware is conceded, and for that reason, if for no other, the manufacturers of the United States are more than anxious to read this report.

So far, not an inkling has been given as to the prob-

able contents of the report. That it will not be ready for the public files before Congress meets is generally admitted by all of the manufacturers.

There is reason for believing that at the next session of Congress there will be just a bit of tariff tinkering, and no surprise would be felt if the pottery schedule would come up. At this time, however, there is no assurance that any changes will be made in this schedule, but the fact remains the same that the domestic manufacturers will leave no stone unturned to have the schedule maintained as it is.

First Vice-President William Burgess, of the United States Potters' Association, has made frequent trips to other countries to probe the pottery industry, and he has some salient information that will be exposed at the proper moment, both to the Association and to the Federal officials.

The Rookwood Pottery Co., of Cincinnati, O., is to increase the capacity of its plant, in order to permit of a greater production of art pottery and architectural materials. An addition containing about 3,000 square feet of space is to be built at once. According to President W. W. Taylor, of the Rookwood Company, extensive advances in art pottery work for homes and buildings are to follow the completion of the new addition.

The Paden City Pottery Co., of Paden City, W. Va., this week let the contract for all machinery and kiln bands to the Patterson Company, of East Liverpool. This plant will have a capacity of two kilns, and other kilns will be erected as the business warrants—art pottery and specialties will be manufactured. Some workmen will be taken from the East Liverpool and Zanesville districts.

Potteries at Sebring and at Newell, W. Va., have taken up the proposition of installing new decorating machines, the first of which is to be completed within a fortnight. These machines are being made in East Liverpool and they are a very different sort of decorating machine than has heretofore been used in the domestic potteries. Flat ware is decorated automatically, and the amount of ware decorated in a day depends entirely upon the speed of the operator of the machine. The use of this machine is going to greatly reduce the cost of decorated gold treatment ware, and especially that class of ware which is sought rather generously for "scheme trade."

After an idleness extending over several weeks, the plant of the William Tritt China Co., at Niles, O., has resumed operations. The pottery was placed in operation over a year ago, and this, the first time it has suspended work, was on account of repairs to machinery which were necessary to be made.

Harry A. Keffer, a stockholder and salesman for the Warner-Keffer China Co., is now also selling the lines of the Kenilworth Tile Co., of Kenilworth, W. Va., in connection with his pottery.

The plant of the American China Co., at Toronto, O., which passed into the hands of a receiver several months ago, is now being operated in a small way, under the management of Receiver W. B. Goucher and Thomas Price, the former general-manager of the company, and a heavy stockholder also. It is currently reported that this plant will be placed in full operation before the end of the present year.



SAND-LIME CONVENTION.

The American Association of Manufacturers of Sand-Lime Products has issued an official announcement of the eighth annual meeting of their Association, which will take place at Grand Rapids, Mich., on December 5th and 6th, the opening session to be at 10 a. m. on December 5th. All meetings of this Association are held in executive sessions, only members and their invited guests being admitted.

As the past meetings of this Association have proven of great value, it is expected that there will be a full attendance this year. Practically every successful manufacturer of sand-lime products in the United States and Canada is a member of this Association, and as the meetings of the Association are for the mutual assistance of all members, every one opens his heart and gives from his experience valuable information that helps to overcome the difficulties met with by the various members. Before or after the meeting, all members of the Association are invited to visit the new sand-lime brick plant at Kalamazoo, Mich. (about fifty miles from Grand Rapids), where the new process introduced by the Jackson & Church Co. is in operation. The members of the Association are also invited to visit the plant of the Grande Brick Co., at Grand Rapids, Mich., where it is said they are making money as well as brick. All those desiring further information in regard to the convention may secure same by addressing the secretary, W. E. Plummer, 211 Filmore Ave., Buffalo, N. Y.

PLANTS SOON TO BE OPERATED.

We are informed that the machinery is being installed at the plant of the South Michigan Brick Co., at Saginaw and it is expected the plant will be ready for use very soon. This company also has a new plant in Kalamazoo which will also soon be in running order. The headquarters of the South Michigan Brick Co. are at Saginaw, but the company has plants and yards in Kalamazoo, Saginaw, Grand Rapids, Jackson, Michigan and Michigan City, Ind. This company has a large business built up and its product is shipped to all sections of the country.

WET GRINDING MILL INSTALLED.

The Flint Sandstone Brick Co., of Flint, Michigan, whose plant we described last month, has improved its product very materially by the installation of a wet grinding mill furnished them by the American Clay Machinery Co., of Willoughby, Ohio. It will be interesting to our readers to note the method used in charging the grinding mill. The Flint Co. has constructed a special car, which is partitioned off, and holds six cubic feet of material. The first charge contains three cubic feet of hydrated lime and three cubic feet of the sand. This is dumped into the mill and allowed to grind three minutes. The car is then loaded with six cubic feet of sand and again dumped into the mill. The whole mass is then allowed to grind together in its moist condition for about two minutes, when the machine is evacuated and contents elevated to

the press hopper. It will be of interest to note that a division of the sand and lime is made, and a preliminary grinding of all the lime and a portion of the sand made before the addition of the remaining batch of sand. The economy of the above method will be of interest to manufacturers of sand lime brick, as no drying of the sand is required, and but one mill used for the preparation of material for approximately 22,000 brick per day of ten hours.

SAND LIME NOTES.

We are informed that the new plant of the Bay State Brick & Stone Co., at Indian Orchard, Mass., has been completed and is now in running order. The plant was constructed under the supervision of Engineer Karl M. Reissman of New York.

SAND-LIME NEWS.

The Saginaw Sandstone Brick Co. has secured the contract for supplying the brick for the new Nelson Bros.' plant near Holland, Mich. The contract calls for 75,000 to 100,000 brick. The facing of the main buildings will be of brick.

PLENTY OF ORDERS IN SIGHT.

The Buffalo Sandstone Brick Co. reports that it has sold all the brick in stock and has orders in sight for another three months' business.

NEW NEBRASKA PLANT.

The Commercial Club of Omaha, Neb., has announced a new acquisition to Omaha's manufacturing interests. The new company has been organized under the title of the Nebraska Pressed Brick Co., being truly a local concern, financed entirely by Omaha capital. The paid up capital is \$250,000. The company has bought out the Cement Works, where machinery will be installed for the manufacture of sand lime brick in various colors. The officers are T. F. Stroud, president; Guy Dean, vice president; N. T. Berger, secretary-treasurer; L. L. Clark, general manager.

"Sandstone Brick have been used in large quantities by the Southern Pacific Railroad Company, in U. S. Government work, State and University work, etc. This growing industry has also supplied brick for buildings in different cities of California, such as the San Leandro High School, the large shops of the Pullman Car Works at Richmond, the Presbyterian Church at San Jose, the Carnegie Library at Salinas, etc. The Oscar Hammerstein Grand Opera House of Philadelphia is faced with 500,000 sandstone brick; the Buick Automobile people have used over 15,000,000 of them and with the mass of evidence and testimonials from all over the country in behalf of sandstone products, it seems strange that many cities have to go through the experience of a great conflagration before their eyes are opened to the necessity of using only fire-resisting materials."

THE AMERICAN SHOVEL.

The increasing necessity among clay product manufacturers for modern and labor saving equipment has largely increased the demand in this industry for steam shovels. Because of the necessity for decreasing manufacturing costs, every avenue of expense is more closely watched than formerly and costs reduced wherever possible. In this effort to cut down operating expenses, the steam shovel is an important factor. Through its use the cost of digging and handling clay or shale is largely reduced.

One of the most important steam shovels provided for the use of clay products manufacturers is that placed on the market by the American Hoist and Derrick Co. of St. Paul, Minn., and illustrated herewith. It is called the "American Steam Shovel," and in explaining its particular advantages to the trade, the manufacturers dwell upon the following points of merit.

The American shovel is what is known as a "full circle machine." That is, its mechanism is such as to permit its rotation in a full circle, thus giving it its full working radius in every direction. While the machine swings in a full circle, yet no outriggers or side braces of any kind are employed.

In some cases, machines are called "one-man operated" when they are not strictly so. In the case of the American shovel, however, the operator stands well to the front of the machine and has an unobstructed view of the dipper and of the work being done at all times, and thus can give his attention to the work being done by the machine as well as to operating its mechanism.

One of the features of this shovel is its double cylinder non-reversing engine and the friction device with which it is equipped.

The American shovel is especially economical because of its flexibility in handling. With the machine is provided patented portable telescopic track sections. These sections are easily handled by the machine itself, and enable it to travel quickly to any part of the pit, either short or long distances, without laying regular tracks.

When the bottom of the clay pit is in a soft condition, ties can be spiked to these track sections, giving a more solid foundation to bear the weight of the machine and permitting the machine to travel safely and rapidly over soft or uneven surfaces without the necessity for planking same.

The flexibility of the American shovel is especially noteworthy in its ability to dig deep below the level of the machine, and high above such level, and to dump on cars below or above the pit level. It has a working radius up to 30 feet, and with its portable track equipment and easily adjustable digging arrangements, the shovel readily makes its own face from perfectly level ground to the required depth. The digging depth and working radius are quickly changed without any alteration to machinery, at the will of the operator. It works equally well for stripping the clay bed or in deep pit working.

A special feature is found in the American shovel in

the plunger and boom point. When the machine is handling clay of a sticky nature, which sticks to the bucket, this plunger quickly pushes the material through and saves much time.

The American is a powerful shovel and can be used under the most trying conditions. It can run anywhere, even up on to flat cars under its own power. It digs with equal effectiveness at any angle to the track and it will not back away from the work in the hardest kind of digging.

The manufacturers in introducing this shovel to the clayworking industry will be glad to receive inquiries, and to give the benefit of their experience and knowledge on the subject of steam shovel work to any manufacturers of clay products.

CITIZENS OBJECT TO CONCRETE.

One hundred citizens of Newark, N. J., were present at a meeting of the Board of Education, where objections were held against the decision of the board to construct a new school building of cement, instead of brick or stone. A petition was presented to the board urging that brick be used for the building.



The American Steam Shovel at Work on Clay Bank.

A company has been incorporated at Augusta, Me., under the title of the American Volsam Co. with a capital of \$100,000 to dig quarry or mine clays, minerals etc., and to manufacture pottery, sewer pipe, tile and brick. The officers of the company are: President, E. J. Pike; Treasurer L. J. Coleman and Secretary, Chas. L. Andrews.

George Burns, for twenty-five years a tile and mantel dealer in New York City, died recently at his home at 548 Decatur St. New York. Mr. Burns was a member of the Tile, Grate and Mantel Dealers Association.

OPENED OFFICES IN BALTIMORE.

The Union Mining Co., which owns the Mount Savage Fire Brick Works, Mount Savage, Md., has recently taken a lease on a commodious suite of offices on the eleventh floor of the new Fidelity Trust Building, Baltimore, Md., where the president's offices, as well as those of the sales department, are located. The general accounting, laboratories and manufacturing departments will remain at Mount Savage.

AN ANCHOR TO WINDWARD

Every clay manufacturer must feel at times the advantage of having a sufficient variety of products to permit of his adjusting his business according to prevailing conditions. If his product is entirely brick, there will be off-seasons, when prices will be so low as to afford little profit to the manufacturer; the market will be overstocked and he will be unable to dispose of his entire capacity. The same condition is likely to arise if tile is the only material manufactured. This condition was especially noticeable during the past year, when owing to the season being very dry, there was less ditching done than usual. The consequence was that many tile manufacturers found it difficult to dispose of their product. In one case that we know of, one of the largest manufacturers of drain tile in the country found it necessary to go into the manufacture of fireproofing to keep one of its factories busy.

Many clay products manufacturers will, therefore, be glad to know of the opportunity for securing the right to manufacture a new form of clay products which offers a larger percentage of profit than either brick or tile and which can be manufactured in any stiff-mud yard with little additional cost beyond the securing of the necessary dies. We speak of the Denison interlocking tile, perfected by Mr. W. C. Denison of Cleveland, O., the patents on which are owned by the Ohio Clay Co., Schofield building, Cleveland, O.

In the Denison tile, however, is found something more than merely a side line to take up when conditions are unfavorable for other products. Once the manufacture of this tile is commenced, the clay worker is likely to soon find it a case of the "tail wagging the dog," for this material, once introduced in a community, becomes so popular that it soon constitutes the most important part of the business of the manufacturer fortunate enough to secure a contract to manufacture it. The merits of Denison tile as a wall building material are so pronounced that its introduction to a new field is a comparatively easy matter. It immediately means the favor of both architects and building contractors.

No better illustration of the favor with which Denison tile is received can be found than a letter from the Great Eastern Clay Products Co. of New York City, published in the last issue of "Brick and Clay Record." In this letter, the president of the company says:

"Although we have been manufacturing Denison tile but a few months, our monthly sales amount to approximately 150,000, which is equivalent to one and one-half million common brick, and we confidently expect to market not less than three million of the double size Denison interlocking tile next year. We know the manufacture of the Denison interlocking tile to be a profitable proposition, and owing to the undoubted fact that this construction, on account of its merits, is bound very largely to take the place of common brick and wood construction, we are now devoting great energy to exploiting the Denison interlocking tile. We are already arranging to largely increase the output of our plants to take care of the increased orders which are coming in daily."

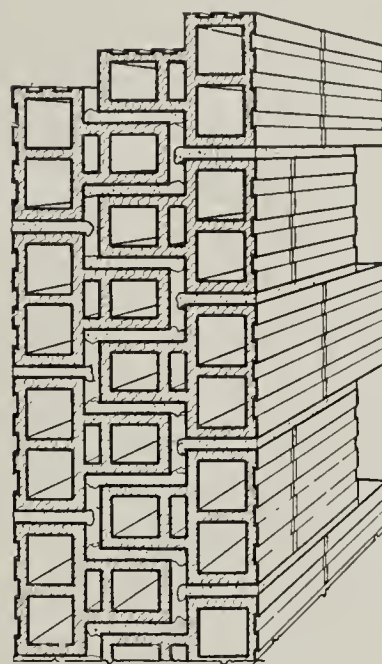
It will be seen by this quotation that this company, one of the largest clay working concerns in the East, find the making of this interlocking tile or brick so profitable that they have found it necessary to increase the capacity of their plants to take care of the demands made upon them for this material.

The letter goes on to tell of the particular merits of the Denison interlocking tile as a building material. Among the remarks upon this subject are the following:

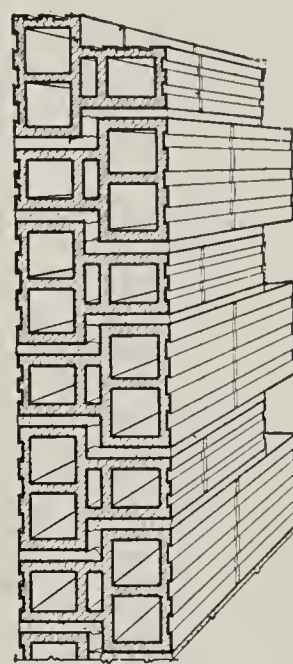
"The Denison interlocking tile, in our opinion, is a

meritorious invention; its double bed, its web over web construction, the one unit building the several thicknesses of wall, its numerous confined air spaces produces construction that is strong, fireproof, non-conductive and more elastic in construction than any other form of hollow tile. The more experience we have in the manufacture of the Denison interlocking tile and the more commendations we receive from architects and builders using it, the more we believe it to be the best load-bearing tile ever devised or that can be devised."

This quotation dwells upon the value of walls built of this tile as load bearers. The web over web system and the open mortar beds insure the most substantial kind of wall construction. In fact, this tile provides what might be called a double mortar bed, and its perfect bonding as a result of this makes it especially popular with architects and builders. As can be seen by the two illustrations herewith, with the tile laid horizontal instead of vertical, as is the case with the ordinary fireproofing, yet



TWELVE INCH WALL



EIGHT INCH WALL

the result is the production of continuous vertical partitions of burned clay, or perhaps they might better be called hollow columns of burned clay. This construction produces three desirable results. First: A better bed for the tile, consequently better bonding. Second: The load bearing strength from the web over web construction. Third: Better air circulation.

As to the load bearing capacity and fire resisting qualities of the Denison tile, the following report of the Department of Public Safety of the City of Cleveland will be interesting:

I herewith submit report on tests made by your company for the City Building Department and ordered by me under Section 356 and revised Ordinance No. 18968, Section 544 (a). Test made on the afternoon of January 11, 1911. Location, American Steel and Wire Co., Broadway avenue. (Weather, rain and cloudy. Temperature 53° Fahr.)

Object of Test.

To ascertain if the Denison interlocking hollow brick, when erected as a wall under heavy uniformly distributed loading, would stand the fire test specified under Ordinance 18968, Section 544 (a) of the Building Code. The Building Department requested this test to be made with a loaded wall, and the company therefore so conducted it.

The inclosure was built with the Denison interlocking hollow brick, 8-inch blocks being used, laying up a 12¾-inch wall with ¼-inch of plaster (sand and lime) on the inside face. Beds and joints laid up with lime mortar with a little cement. The testing inclosure was built of the following outside dimensions: 8' 6" x 10' 3" x 8' 9" high, with a 3-inch coping of concrete on the top.

At one end an opening was left into which the fuel was introduced. This opening was about 2' 6" x 2' 0" and closed with sheet iron when the test was conducted. Two pyrometers entered on

a vertical center line of one of the sides, one at a point about 18 inches below the top of the concrete coping, and the lower pyrometer about 4' 8" from the same point.

The roof or covering was of No. 26 gauge sheet iron laid on steel rods spaced 12 inches apart, the ends of which were bedded in about 2 inches of the concrete coping on top of the walls. An opening was left in the center of this roof 36x36 inches and the edges secured. Provision by tunnel was made to secure effective draft for the fire while the test was being conducted.

Loading.

The entire walls were loaded with pig iron at about 4,066 pounds per running or square foot. This iron was laid directly on top of the 3-inch concrete coping.

TEST.

January 11, 1911.

RAINING.

Temperature 53° Fahr. 3 p. m.

Time, P. M.	Top pyrometer, Degrees Fahr.	Bottom pyrometer, Degrees Fahr.	Diff. of time.	Variation of temp., top and bottom, degrees Fahr.
3:19	Fire started; opening closed.			
3:23	825	425	4 minutes	400
3:25	1175	425	2 "	750
3:26	1225	475	1 "	750
3:28	1350	600	2 "	750
3:29	1400	675	1 "	725
3:30	1425	750	1 "	675
3:31	1500	775	1 "	725
3:33	1550	850	2 "	700
3:35	1625	900	2 "	725
3:37	1625	955	2 "	670
3:39	1650	1025	2 "	625
3:40	1700	1100	1 "	600
3:42	1700	1200	2 "	500
3:44	1725	1240	2 "	485
3:45	1750	1275	1 "	475
3:47	1760	1325	2 "	435
3:50	Top	1475	3 "	
3:53	pyrometer	1500	3 "	
3:56	out of	1525	3 "	
4:02	order.	1600	6 "	
4:03	Water turned on 15 feet distant and fire quenched.			

The failure of the top pyrometer to record the last four readings did not, in the minds of those present, at least detract from the efficiency of the test during the time of operation. It was generally conceded that a temperature of over 2,000° Fahr. had been attained.

The outside wall surface did not even warm, but remained cool during the entire time of test, with no warping, settlement or cracking of any kind. Inside common plaster all burned off. Inside face of hollow brick tile, true, and in no case was any damage evident. After punching a hole completely through the rear wall (where the water came in first contact), the entire tile sections were left absolutely undamaged.

The committee appointed were: W. S. Lougee, architect, former building inspector; Charles Knox, building inspector, Youngstown, Ohio; Victor Thebaud, architect, Cleveland. While the following gentlemen were present: Virgil G. Marani, building inspector, Cleveland; James P. Cross, engineer of construction, department of buildings; E. A. Roberts, secretary, Builders' Exchange; Livingston Fewsmith, architect; W. C. Denison, the Ohio Clay Co.; George Denison, the Ohio Clay Co.; Bert J. Graham, the Ohio Clay Co.; James Stamberger, chief of police, East Cleveland; W. H. Lawlor, fire chief, Youngstown, Ohio; D. K. Moser, fire chief, Warren Ohio; Robert Mesner, fire chief, Canton, Ohio; George Knofflock, fire chief, Mansfield, Ohio; Arthur August, fire chief, Alliance, Ohio; T. J. McFarland, fire chief, Marion, Ohio; E. C. Essex, fire chief, Lorain, Ohio.

The pyrometer readings were taken by Mr. F. J. Frink of the Frink Pyrometer Co., with a thermo electric pyrometer.

Mr. W. C. Denison of the Ohio Clay Co., in a letter to the Building Department dated January 17, 1911, states that on January 11, 1911, the rear wall upon which the test was made and through which the hole was made, was further loaded with pig iron to an evenly distributed load of 80,640 pounds, or about 9,487 pounds per running or square foot.

There was no evidence of crushing, cracking or disintegration of any sort.

This load test was witnessed by Architects W. S. Lougee and Theodore Schmitt of this city.

(Signed) VIRGIL G. MARANI, Inspector of Buildings.

In this connection it will be interesting to note that the Cleveland building code permits Denison tile walls to be loaded over five tons per square foot, although this is but a fraction of their carrying capacity.

Another reason why this block is very popular with the building public wherever it is introduced is because of the economies in construction which its use permits. With such tile, no furring is required, as the interior can be plastered directly upon its surface. In the construction of one hotel now being erected, \$25,000 was saved through the use of Denison tile. Of this saving \$6,750

constituted the economy on steel work; nearly \$14,000 was saved in furring, and over \$4,000 was saved in cost of labor in laying and in mortar.

Those who are so fortunate as to secure the rights to manufacture this material are sure to be required to produce same to their full capacity, and they will find that they will secure more profit per ton of clay than through the manufacture of any other line of products. The Ohio Clay Co. are extremely reasonable in their royalty terms, although their patents are so well protected that no interlocking tile embodying any of the points of merit shown in the Denison tile can be manufactured without infringing. Others have investigated this matter and found the Denison patents impregnable. A few words taken from the Great Eastern Clay Products Co.'s letter bear upon this subject:

"Inasmuch as the Denison interlocking brick is protected by patents, it is largely removed from the strictly competitive field, and we are very greatly pleased that after your visit to our works some months ago you decided that we were large enough and broad enough in every way to handle your invention in the Eastern market."

The Ohio Clay Co. have made a considerable number of important contracts, but as yet a large amount of territory is uncovered, and those who wish to secure the advantages to be obtained through the manufacture of this new building material should negotiate with the company at once.

SEMI-ANNUAL NATCO MEETING.

The semi-annual meeting of the Natco Sales Association of the National Fire Proofing Co., was held in the general offices of the company in the Fulton Bldg., Pittsburgh, for two days, beginning Oct. 26, and was attended by about sixty salesmen from all parts of the country. The meeting, we are told, was full of interest from "start to finish," for this company is one of the few which has shown a decided increase in its business during 1911 over that for 1910. A feature of the meeting was an illustrated lecture given by P. H. Bevier, the company's engineer, and one of the most noted authorities on fire proofing work and construction in the world. The object of the meeting was entirely educational, and was held with a view in mind to increase the sales efficiency of the sales department.

Stockholders of the National Company have received their dividend checks for the 54th quarterly dividend which has been paid by this company.

The company lately has been figuring on some big work in all sections of the country. More attention is being paid to fireproof construction everywhere. In the city of Richmond it is stated that \$5,000,000 worth of building work is now under way and that fully 25 per cent of it is construction of the unburnable type. Dwellers in suburban districts and especially those out of the zone of fire protection, are turning their attention to fireproof construction. This fact has become evident, an officer stated, through the large inquiry for the company's materials. In fact it is stated that the company not only is having a demand for hollow tile fireproofing from all sections of the United States, but from points outside of the country.

NEW BUSINESS RELATIONS.

G. W. Kneisly, formerly with the Edgar Allen American Manganese Steel Co., and well known in the clay industry, is now connected with the district sales office of the Lackawanna Steel Co., at Cleveland, Ohio.

A DEMONSTRATION IN EXPLOSIVES

Danger of Accident and Injury Largely Eliminated by the use of the New Explosive, Dynalite, Which is Powerful and Effective

Nearly every manufacturer of clay products is confronted with the problem of securing his raw material at the lowest possible cost. When that material is in the form of shale, the use of explosives in the breaking up of the material, through face boring or by open pit methods, requires the use of a considerable amount of explosives. Even where the material is a soft clay, explosives are frequently used for breaking down the clay banks to permit the easier loading of the material on the cars. In many cases underground mining is employed, especially in the securing of fire clay. It can, therefore, be seen that explosives form a very important part in this particular branch of clayworking operations, and a discussion of the subject will be of interest to a large proportion of our readers.

Heretofore the clayworker has felt that it was simply a question of using dynamite, and that the use of same involved a large hazard, which was unavoidable. Most clayworkers, however, feel the responsibility of placing

cle. It is proposed to give the readers a visual demonstration of the safety and merits of the explosive "Dynalite," which is being so generally adopted throughout the country in preference to dynamite. The demonstration is made through the accompanying pictures, made expressly for "Brick and Clay Record," and illustrating fully the points of safety and merit of this wonderful explosive.

The dangers involved in the handling of dynamite are numerous and accidents may result from a large number of varying causes. The most important and most dangerous constituent of dynamite is nitroglycerine, an explosive which in itself is so uncertain in its character that no rules can be given which can ever make it a safe material to handle. The most common accidents resulting from the use of dynamite are those resulting from attempts to dry the material when damp or to thaw same when it is frozen or hardened by frost. This is always a dangerous operation and yet one that is extremely common in the handling of this explosive.



An Explosion of Dynalite in a Rock Quarry.

this dangerous explosive in the hands of their employees and there is always in their minds the constant fear of accidents, involving serious injury, loss of life and possibly costly damage suits, resulting from same.

With this danger constantly in mind, clay products manufacturers will be pleased to learn of an explosive which will reduce the danger of such accidents to a minimum and which will practically eliminate the possibility of injury to employees or loss of life where dynamite is employed. In dynalite they can find an explosive which will not only be safe but which will be more powerful and effective and more useful for their purpose than dynamite, and they will certainly be glad to give this explosive their preference.

The clayworking fraternity, however, is of the "show me" kind, and they naturally would wish to be convinced of the claims of any such explosive before adopting same. They would like to see an actual demonstration to prove to their satisfaction the safety of the explosive offered them, as well as its effectiveness for their work. It is with this idea in view that the writer prepared this arti-

Dynamite, to be effective, must be in a dry condition, and for this reason it cannot be used in under-water works or in damp places, and if it absorbs any moisture it becomes ineffective.

The ordinary dynamite cartridge will explode frequently with most surprising ease. It will explode if set afire. It will explode frequently from ordinary concussion. It is a dangerous material to place in the hands of anyone who is not thoroughly familiar with its use or who does not exercise the utmost care in its handling.

The accompanying illustrations show that few of the dangers involved in the handling of dynamite are involved when dynalite is used.

Carelessness of employees, which would certainly result in fatal accidents in the use of the former, is a matter of indifference when the latter material is employed. Illustration No. 1 shows the inventor of Dynalite, Mr. F. H. Briggs, holding in his hand a lighted stick of the explosive and allowing same to burn to his finger tips without explosion or any harm being done. This is a regular pound stick of dynalite, and if it were dynamite in-

stead, Mr. Briggs would not have lived long enough to give the photographer a chance to take a picture. Illustration No. 2 shows a stick of burning dynalite thrown against the trunk of a tree. The explosive was thus subjected to two safety tests—that of fire and impact. The

their advice and suggestions to the clay products manufacturers without cost and will be pleased to answer any questions that may be sent to them regarding the proper use of explosives and the advantages to be obtained through the use of dynalite. Another article to follow



A Burning Stick of Dynalite Shattered by a Shot from a Gun. Dynalite Being Consumed by Fire without Explosion.

burning cartridge was thrown with force and its fragments were scattered in every direction and yet there was no explosion. Either the impact or the fire would cause the explosion of a stick of dynamite.

Picture No. 3 shows a stick of dynalite which has just been shattered with a load of shot from a heavy fowling piece. The inventor threw the stick of dynalite on the ground and shot into same at a distance of only about ten feet, the load of shot producing a terrific impact upon the stick of dynalite and tearing it practically to shreds. Illustration No. 4 shows a stick of water-grade dynalite being taken out of a small pool of water after 24 hours' immersion.

Illustration No. 5 shows an explosion made by same cartridge immediately after being taken out of the water and without any attempt being made to dry same. In this case the end of the cartridge was opened and the water allowed to come in direct contact with the dynalite, and yet same was in just as good condition and produced just as heavy and effective an explosion as if it had never come in contact with the water.

Illustration No. 6 shows an explosion of dynalite in a rock quarry. This was a "mad-cap" shot for the purpose of breaking a large rock and the effect of the explosion can be readily seen in the illustration. Illustration No. 7 shows the effect of fire—a deep shot in a pool of water and the geyser formed by the explosion. In this case, one cartridge of water-grade dynalite was used. Illustration No. 8 shows the effect of fire—the shallow shot in water, using but two sticks of water-grade dynalite which had previously been immersed in the water 24 hours. Illustration No. 8 shows a burning stick of dynalite which has just been shattered with the shot from a shot gun and which had absolutely no effect, the cartridge of dynalite simply being consumed by fire without explosion.

The object of this article is to make the use of dynalite so plain and its safety so convincing that it will be unnecessary for the manufacturers to send a personal demonstrator to prove the claims made. The manufacturers, the American Dynalite Co., of Elyria, O., are glad to give

this will give some advice as to the proper use of explosives in clayworking operations.

The best evidence of the value of any material is from the opinions of those who have used same. The American Dynalite Co. are ready to refer inquirers to clay products manufacturers who are now using their explo-



A Pool of Water and Geyser Formed by Explosion of Dynalite.

sive in preference to all others and who are enthusiastic regarding its superiority.

The two following letters on this subject will be of interest, as they are written by well known brick companies who have had experience with all kinds of explosives:

"We use dynalite in preference to dynamite because it

is safer, cheaper and has greater power. The method of using it is practically the same as dynamite, the shot being deposited in 10 to 16-ft. holes and discharged by an electric battery. We have found it very satisfactory."

A. L. Pendershot, Asst. Treas., Cleveland
(O.) Brick & Clay Co.

"Until about three years ago we had used dynamite for blasting shale, and black powder for the clay. The for-

clay than we did with dynamite and black powder, and at a reduction in cost. Second, it does not scatter the material as much as dynamite. Third, it never needs thawing in cold weather. Fourth, water has no effect on water-grade dynalite. Fifth, last but not least, we consider it absolutely safe to handle, and have no fear of an accident while using it.

"We use the water-grade entirely, as we find it takes



Mr. Briggs Holding in His Hand a Lighted Stick of Dynalite.



A Stick of Dynalite Which Has Just Been Shattered with a Load of Shot.

mation of our bank is composed of about twenty-five feet of blue clay, and underneath the clay we have forty feet of shale. We were never able to produce good results by blasting the clay with dynamite, consequently we used

less time in charging, as it is not necessary to have the holes perfectly dry. We use a battery for exploding the charge, which as a rule consists of ten or fifteen holes.

"Until about a year ago we used a small twenty-four



Showing Effects of Shallow Shot by Dynalite After Being Immersed in Water 24 Hours.



A Stick of Water Grade Dynalite Being Taken from Pool of Water.

black powder and thought we were getting good results. We also believed we were having good results in blasting shale with dynamite, until Mr. Briggs, of the American Dynalite Co., called on us and thoroughly demonstrated that we were wrong in our belief, and that better results could be obtained by the use of dynalite.

"We have used dynalite for three years, and this is why: First, we produce better results in both shale and

hole battery, which was badly worn and necessitated the purchase of a new one. We ordered two on trial, a twenty-four and a one hundred-hole battery. In trying same out we found that we got the same results with five sticks of dynalite per hole, with the one hundred-hole battery, as we did with six sticks and the small battery, we therefore kept the large one."

H. K. Smith, Supt., United Brick Co., Conneaut, Ill.



Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers— Market Fluctuations and Industrial Prospects

OUR EASTERN LETTER.

New York, Nov. 25.—Hudson river common brick is firmer at this time than it has been at any time so far this year. This is true despite the fact that November normally is an off-month for building construction, hence is usually the month of lowest prices. This year it has so far proved abnormal as to demand, and exceptionally strong as to price. Manufacturers are getting a dollar and a quarter more than they received for their product last April, and the barge sales are greatly in excess of the mid-June transactions. Not in five years has common brick brought \$7.00 a thousand at dock, but that is the price that will be asked and received today, tomorrow and up to a week preceding the opening of navigation.

The cause? It is attributable to two factors. First and foremost is the publicity campaign conducted by the Greater New York Brick Co., the largest factor in Hudson river common brick distribution, and the endorsement of that campaign by labor unions which have taken up the fight in the cause of common brick against concrete, for the New York subway system, the fire house contracts, public schools, and in the Wingdale prison and new state buildings at Albany. They have carried the matter to Governor Dix in Albany, to Mayor Gaynor at the City Hall and to the Public Service Commission and behind each argument is the one fact predominant, that common brick is not only safer and more fireproof, but in every instance vast savings can be accomplished for the state, city and general tax payer by building with brick and it will give employment to skilled labor instead of unskilled and unreliable labor.

The second cause of the great improvement in the brick industry is the fact that the encroachment law tangle which has held up \$5,000,000 in building operations in Queens this year, more than \$10,000,000 in the Bronx, and \$35,000,000 in Manhattan has been tentatively solved, and this will at once release vast construction operations that have been hanging fire all summer. The mayor and the corporation counsel plan the establishment of a licensing system to permit buildings to encroach upon the building line for stoops and bulkheads and, so far has the plan been worked out that the building ban in Queens has been raised.

The fact that the consumption of common brick, in this city, has actually increased within the last two months, despite the fact that practically all new building operations in Queens was at a standstill until this question had been settled either by the courts or by the Corporation Counsel, speaks well for the stability of the present market. Under the ruling of Borough President Connolly of Queens, arcways will be permitted to encroach upon the building line provided they have sufficiently strong sidewalk coverings, flush with the pavement. Cornices will be allowed to project over the roof of the building and beyond the building line providing they project more than ten feet above the sidewalk.

Most of the dealers in Queens have been laying in common brick in anticipation of a big demand when the rush occurred and this has taken care of a large part of the outward movement during the two weeks prior to November 2, when the price was advanced twenty-five cents to the winter level of \$7.00. But, despite this precaution, the releasing of large numbers of contracts in both Queens and the Bronx has produced an actual shortage in the distributing yards and these interests have been the ones primarily responsible for the heavy buying movement since the first of the month.

The last barge loads of brick from the extreme north

end of the Hudson river district came in this week. They are stacked for winter and the barges will not return until navigation reopens. Most of this brick went to the local distributing yards, but the fact that it was the last of the up-river brick caused many Newark dealers to make engagements for covered cargoes for the better grade of work in East Jersey during the winter. The Haverstraw and Newburgh yards have been taking advantage of the last few days of warm weather and have been shipping heavily into this market. In fact, the shipments during the last week have been much heavier than at any time this year with only three exceptions, but they are not coming in at random. The movement is governed entirely by demand and the very fact that the selling organization here has stood out firmly in favor of a definite and permanent winter price, precludes speculation and insures to the consumer better brick at uniform prices. In other words, there will be no evidence of artificial price inflation dictated by an alleged demand, of which the average consumer has no proof.

Turning Out a Better Hudson Brick.

It is entirely probable that many improvements will be made in the mechanical equipments of many Hudson river brick yards. New kiln systems doubtless will be employed for the reason that it is necessary that the manufacturers dispense with the great quantity of so called "light hards" that are now barred in this market and which represent a total loss, practically speaking, to the manufacturer. Up to the present year "light hards" had a market value and were shipped here for wall filling in frame houses and light structural work like barns, etc. But the elimination of frame construction in New York and the extension of the fire lines in Brooklyn, Queens and the Bronx, has caused the building superintendents to entirely bar out light hard brick. The result is that vast quantities of this waste is stacked on every Hudson river yard and in the Raritan valley yards.

Light hard brick is directly the result of imperfect and uneven burning and there is some talk among the members of the new selling company to install more modern firing systems. Another change, probably, will be the substitution of unit electric power instead of line drive as now almost universally used in the district. Handling equipments and electric railways and tramways will be required and there is some attention now being paid to the question of boiler efficiency in the individual shops. The fact that these changes are contemplated has awakened other manufacturers outside of the Greater New York Brick Co. to the conviction that the new company is going into the new order of things in earnest and that the day of antiquated manufacturing processes is passed.

Must Cut Down Manufacturing Costs.

President Rose of the Greater New York Brick Co. told me, that as good as Hudson river common brick now is, it must be made better. More care will be taken in culling and the color will be more uniform to keep faith with consumers in this market. His implication clearly was this: That if common brick is going to be put upon a plane where it can compete with concrete upon the ground that concrete is unreliable and not artistically or economically permanent in color or quality, there must be no come-back in brick sold by that company.

"If we are going to make our campaign," said Mr. Rose, "upon the virtues of our brick we have got to prove those virtues not only upon the day we make our sale, but a year, two years, fifty years from now. We have got to be able to point out in any brick wall and

make apparent to the architect, or builder or the purchaser, whoever he may be, the difference in color, texture and general quality of a brick made and laid up prior to 1911 and that made after 1911 when the new order of brick standards became effective."

New Equipment May Be Imperative.

It is apparent that if the equipment in some yards is not sufficient to produce a brick that in general market competition will command the price of the best now made, then, if the fault be with the equipment, new machinery must be installed. The company eventually plans to carry no weak members. All must be able to turn out a brick of uniform standard. If one yard costs more to operate in proportion to its output than another, special attention will be given to cutting down the waste, calking the leaks and putting that yard in a position to earn money for its owner. If the fault lies with the clay then means must be taken to improve it.

Such a plan, of course, will not work out in a single season. Radical changes like this take time, but it is stated in order to show that the ultimate purposes of this company is the reformation of the Hudson river brick industry. The wonderful success of the program of publicity has already convinced the manufacturers that there is room for modernizing the Eastern brick industry and the very fact that the organized brick manufacturers and the labor unions were able to procure a complete change about in the \$1,000,000 fire house specifications by working shoulder to shoulder, and the fact that Commissioner Cram of the Public Service Commission of the first district has given special attention to the petition on behalf of brick in the construction of the \$178,000,000 subway system in this city, the statement by the Superintendent of Buildings, in Newark, that he will approve the construction of no more concrete structures while he is in office, but will insist upon the use of common brick for basic construction; the fact that Governor Dix has before him petitions favoring the use of brick in aqueduct, prison and educational buildings and settlement of the long standing feud between the brick layers and the employers in this city, indicates a future prosperity for common brick here in the East never before known even in \$10.00 brick times.

The General Eastern Brick Market.

The general Eastern brick market is very satisfactory. The Raritan field is very active. The Sayre & Fisher Co. there is the most active factor in that section and it is now operating its steam drying plant and will probably continue to run all winter at 80 per cent of capacity whereas last winter the percentage was much lower. This company has recently taken some very important contracts for winter delivery in New Jersey where East of the Raritan and Watchung mountains and North of the Passaic hills very great activity in railroad improvement, harbor and river front development, marsh restoration and industrial building will feature the winter. In Newark, this company reports that its distributing agency has a heavy inquiry for mercantile buildings and apartment houses, but there is little movement now in dwellings and public buildings. The plants in Hackensack district have shut down for the season, with one or two exceptions, and these will close as soon as the first actual cold snap comes. If this is deferred for another week it will give all the manufacturers an opportunity of turning out their full allotment, providing, of course, there is no heavy rain.

There is a large quantity of Connecticut brick now in this market, but it is not making of itself a serious factor. This brick is selling from a quarter to a half below Hudson river brick along the line of the New York, New Haven & Hartford R. R., but elsewhere it is negligible as a selling factor.

General Clay Conditions.

One of the most active features in the Eastern clay market is architectural terra cotta. The largest Eastern companies report very little falling away in business while some declare that they have noticed no abatement from the usual run of orders taken this year. The fireproofing houses are still finding an active call for structural material, the weather so far permitting rapid consumption. The National Fire Proofing Co. probably will run about

75 per cent of capacity all winter while the Atlantic Terra Cotta Co. will operate about 90 per cent.

Comment and Personal.

The degree of estimation in which Eastern brickmakers are held is shown by the fact that they are constantly bobbing up for public office, and, in most cases getting there. There is Senator John B. Rose, of Newburgh, for instance, who is one of the largest brickmakers in the East; and Alonzo Rose, who was prominent in the last campaign in Kingston as the Prohibition candidate for mayor of that thriving center of the up-river brick industry. H. R. Brigham, another brickmaker, was nominated on the Republican ticket, up there, and defeated the cold-water candidate, not because Alonzo R. was less popular, but because Republicanism is apparently more popular as an issue than "Teetotalism." Up in the Assembly, at Albany, the speaker and others delight in saying George Washburn's name quickly so as to make it sound like Washington, because, like the Great Father of His Country, he stands high in the councils of his party and has just been sent back for another term.

PROMISING PROSPECTS IN MIDDLE WEST.

Birmingham, Ala., November 24.—Notwithstanding real winter appears to have come to stay with the middle south section only promising prospects are indicated in the brick trade, activity in sales, expansion in operations, both in the nature of enlargements and improvements in established plants, and the organization of new factories and selling companies, marking the general condition of the trade.

Among the established plants which have recently largely increased their capacity is the Jenkins Brick Co., of Montgomery, Ala. The installation of the new machinery has been completed and it is now all in operation, giving a total capacity of 36,000,000 brick per annum. The Jenkins Brick Co., capitalized at \$100,000, with the increased output thus secured becomes one of the largest clay-working concerns in Montgomery. J. M. Jenkins, Jr., is secretary and general manager of the company and associated with him are his father, J. M. Jenkins, Sr., W. L. Lancaster and B. L. Gaddis, all of whom take an active interest in the company. The clay used by the company is procured from clay-pits, located at Wetumpka, a few miles from Montgomery.

L. L. Stephenson, one of the largest shale brick operators of the south, who is also president of the Brick Selling Co., of Birmingham, has lately made extensive improvements on his plant at Lovick, Ala., which is said to be the only plant in Alabama engaged in the manufacture of wire-cut impervious face brick by the "stiff-mud" process. The improvements which have just been completed by Mr. Stephenson include additional digging equipment and another large kiln, as well as a more modern system of gravity conveyors than has been in use, all of which results in doubling the capacity of his Lovick plant.

The Memphis Brick Supply Co., of which Frank H. Reid is general manager, has secured the sales agency for the Stephenson brick for the Memphis field, while the Brick Selling Co., of Birmingham, handles the local output for not only the Lovick plant but four other plants either owned or controlled by Mr. Stephenson and Mr. C. D. Patterson, manager of the Brick Selling Co., and their associates.

A new brick company, known as the Princess Brick & Building Co., has been organized at Geiger, Ala. A plant for the manufacture of building brick by the "stiff mud" process will be erected. Messrs. Ray Crow, George Waller and Walter L. Waller, three substantial citizens of Geiger, are the largest stockholders. The new company will deal in building material supplies of other kinds, also.

As a result of the decision to build the \$4,000,000 industrial and technical school of the Southern Board of Education at Ragland, St. Clair county, Ala., both the city and town are experiencing the preliminary effects of a "boom."

Among the Ragland industries is the Ragland Brick Co., formerly known as the Wilpicoba Clay Products Co.

The Ragland Brick Co. has contracted for the installa-

tion of another kiln, of the continuous type, in its plant. The cost of the kiln and other improvements to be added next spring to cost about \$50,000, will practically double the capacity of the plant.

Frederick Gunster, formerly of Birmingham, who was connected with one of the brick companies now composing the Greater New York Brick Co., has returned to this city to accept the position of secretary and general manager of the Capt. W. H. Graves interests, which include the Graves Shale Brick Co., the Graves-Matthews Paving Brick Co., and several other smaller industries allied with the building trade. Mr. Gunster is a man of wide experience and knowledge of the clay field and his acceptance of the position named is construed to mean enlarged activities by the companies with which he has become identified.

Cooper & Ferguson, of Nashville, Tenn., have announced that a branch office and warehouse for the distribution of brick and other building supplies, will be opened in Birmingham about January. The Norwood-Boyles Lumber Co., recently organized in Birmingham, will also deal in brick.

The Brick Selling Co., of this city, has recently sold both the face and common brick, for the Y. W. C. A. building, the Y. M. C. A., and the Ledger building, three of the most important buildings erected in Birmingham during the present year; also the face brick for the Halle-Loeb building, at Memphis, and the Elk's Club building at Atlanta, Ga.

The Jefferson Brick Supply Co. secured the contract for the Drennen Department Store building in Birmingham.

The Empire hotel, a new \$100,000 hotel building under construction at Birmingham, will be constructed of face brick supplied by the Hydraulic Press-Brick Co., of St. Louis, Mo. The common brick used in the building will be supplied by both the Brick Selling Co. and the Jefferson Brick Supply Co.

The new Federal building at Ensley, to cost \$50,000, will be built of dark red face brick. The brick contract has not yet been awarded.

The Sibley-Menge Brick Co., secured the contract for both the face and common brick to be used in the twenty-story office building now under construction by the American Trust & Savings Bank, of this city. This building will cost about \$1,000,000 and the contract calls for 1,250,000 brick of both classes. This company has also recently secured contracts for the brick for the new postoffice at New Orleans, La., the Hillsboro Hotel, Tampa, Fla., and the Burbridge Hotel, Jacksonville, Fla.

The North Birmingham Fire Brick & Proofing Co., which is owned by the C. D. Smith Brick Co., of Memphis, Tenn., secured the contract for the tile arches in the American Trust building, and the Northwestern Terra-Cotta Co. of Chicago was given the contract for the terra-cotta, of which there will be a large quantity of "special dimension stuff" used.

WEST VIRGINIA.

Wheeling, W. Va., Nov. 28.—A 110-acre tract has been secured by George C. Christlieb of Wheeling, near Summittville, Columbiana county, O., where the new plant of the Summitt Brick Co. will be built immediately. This plant will have twelve 30-foot kilns and will ultimately have a capacity of 40,000 brick per day—both building and paving block will be made. After the plant has been built, the company will drill for gas, and if gas is struck, it will be used for kiln burning.

L. J. Dean of Huntington, W. Va., has completed plans for the new buildings of the Huntington Clay Products Co., construction of which is to be rushed as fast as possible.

The Mack Manufacturing Co., of Philadelphia and New Cumberland, W. Va., has completed plans for the rebuilding of its Union works which was destroyed by fire early in the summer.

At Fairmont, W. Va., the Swiger Brick Co. is erecting a one-story brick plant. John A. Swiger of Fairmont is at the head of the new company. It is estimated that the new plant will cost in the neighborhood of \$30,000.

ST. LOUIS A BIG PRODUCER.

The "St. Louis Star" states that St. Louis is the largest brick market in the United States, as 300,000,000 brick are manufactured there annually. The "Star" also claims that one of the largest brick plants in the world is located there. Further statements in the article are as follows:

"In the manufacture of brick, Missouri is one of the leading states in the Union, as it not only produces its own brick, but ships extensively to neighboring states, while its ornamental, facing and stock brick are exported as far as Alaska.

"The extensive developments of the brick industry in St. Louis and Missouri is due primarily to the existence of very large quantities of clay of exceptional quality.

"The dry press process also was first established successfully in this city. The total production of Missouri is valued at more than \$5,000,000.

"The brick trade classify brick as common or backing brick, stock or face brick, Roman brick, ornamental brick, and enamel brick.

"The price of brick during the past two months has been lower than in years, and many builders have taken advantage of the market, resulting in an enormous increase in the building trades of this country."

ENCOURAGING PROSPECTS IN TEXAS.

Austin, Texas, Nov. 26.—Notwithstanding the fact that general business depression has existed in Texas, during the last few weeks, due to the low price of cotton and the holding off of the market of something like 800,000 bales of this staple, there is much activity in industrial lines that involve the use of large quantities of brick. This is true of all the larger cities and of many of the smaller towns. The slack business is felt chiefly by the merchants and the trades' people generally. So far as known, none of the plans that were made during the summer for the erection of buildings and other improvements during the fall and winter have been cancelled or curtailed. The growth of such cities as Houston, Dallas, San Antonio, Fort Worth, El Paso, Austin and Waco continues to be rapid, and the upbuilding work that is going on is considered to be of a healthy character and not of the mushroom or "boom" character. Many large orders for building brick have been placed with Texas manufacturers during the last month. Besides the erection of buildings much brick will be required for various other industrial enterprises.

In Austin the Hydraulic Properties Co., which has the contract for erecting the new hydro-electric plant here and constructing a dam across the Colorado river, the total works involving an expenditure of approximately \$1,700,000, has just placed an order with the A. J. Zilker Brick Manufacturing Co. for 350,000 brick to be used in this enterprise.

One of the noticeable features of the building situation in Texas is the splendid type of residences that are now going up all over the state. In the style of architecture and features of construction they are not excelled by residential buildings anywhere in the country, it is claimed. The true artist is more able to give exercise to his ability and conceptions of what should constitute a desirable home in Texas and the South, owing to the mildness of the climate, than can possibly be done in the more northern latitudes. The building permits in all of the larger cities of the state show a large increase for the last few weeks over the same period last year. There promises to be an unbroken record of new building construction all through the winter.

Much attention is being given to the erection of new and modern hotels of large size. This is the case in Houston, Dallas and other cities. In Corpus Christi a contract was let during the month for the erection of a hotel to cost \$350,000. In Austin, the Nalle estate has adopted plans for a new hotel that will cost \$500,000, and upon which construction will be started early in the coming year, it is said.

The Seco Pressed Brick Manufacturing Co. has received the machinery for its new brick works which it is installing at D'Hanis, Texas. It is proposed by this

company to supply a high grade of brick for a large part of Southwest Texas.

The constructing of new lines of railway through Western Texas is causing the establishment of new towns and the rapid growth of existing communities in that region, all of which gives an opportunity for an expansion of the brick manufacturing industry.

The Kansas City, Mexico & Orient, which is extending its line from San Angelo to Alpine, Texas, a distance of about 300 miles, recently had an investigation made of the clay resources along that part of its road. The investigation was conducted by Dr. William B. Phillips, director of economic geology and technology of the State University of Austin. He found that clay deposits, containing splendid brick and tile making material, exist at several points between San Angelo and Fort Stockton, which division of the line will soon be finished and placed in operation. The research as to the clays has not yet been conducted beyond Fort Stockton, but it is said that there are large deposits of clay suitable for making high grade brick in the vicinity of Alpine. The character of new buildings that are going up along this and other new lines of railway in Western and Southwestern Texas is of a splendid type. It is expected that new brick plants will be located at different points in those portions of the state which are being rapidly settled in order to meet the demand for building material.

The Chamber of Commerce at Bowie, Texas, is interested in organizing a company to establish a plant to manufacture brick and roofing tile.

The Buck Brick Co., Fort Smith, Ark., will install equipment for making enamel faced repressed brick.

The Athens (Texas) Pottery Co. recently organized with a capital stock of \$100,000, has taken over the pottery works of P. E. Miller at Athens, and also of the Winfield Pottery Co., of Winfield, Texas. The new company will install machinery and greatly enlarge the two plants. The incorporators are P. E. Miller and others.

H. C. Vandaveer, formerly secretary and treasurer of the Athens Fire Brick Co., of Athens, Tex., has resigned his position with that firm to take charge of the office of the Vandaveer-Stoy Co., 316 Chronicle building, Houston, Tex., where he will continue to serve the wants of the trade in clay products.

Mr. Vandaveer has a patented lining for the fire pans of oil burning locomotives which, he says, is giving complete satisfaction where used, and the prospects for future business are very bright.

In addition to this, Mr. Vandaveer has a crude oil burner which is adapted to places where forced draft is used. He has his equipment installed on several of the railroads in the South.

Mr. Vandaveer will handle a complete line of clay products and invites correspondence from parties who wish to place their material on the market in the Southwest.

THE KEYSTONE STATE.

Pittsburgh, Pa., Nov. 28.—A fair amount of business still remains on the books of the building brick manufacturers for delivery this season, and indications are that the majority of the plants, in this district, will remain on the active list throughout the remainder of the year.

The paving brick manufacturers are still busy, and there is no mistaking the fact that these people have received more orders this year than they will be able to fill.

Announcement has been made that the Bolivar Face Brick Co. will make a number of improvements to its plant. Recently the corporation notified the State Department that the capital stock of the company had been increased from \$50,000 to \$250,000. C. W. Hammond is secretary of the company.

Business with the National Fire Proofing Co. continues to increase and recently the company was given the contract for the fire proofing material which is to be used in the new Y. M. C. A. building at Elyria, O.

John B. Myers of Lock Haven, Pa., and Edward L. Myers of Johnsonburg, Pa., have completed the formation of the New Hope Shale Brick Co., which has announced a nominal capital stock of \$5,000. Jacob D. Landes, of 1525 Mt. Vernon St., Philadelphia, is the

treasurer of the new company. Thomas A. Diese of Philadelphia is interested in the new company, as is J. D. Landes of Twin Falls, Idaho.

The Shawmut Clay Manufacturing Co., of Shawmut, Pa., of which S. E. Tuttle is general manager, recently booked a contract for 1,500,000 single duct conduits for use in the construction of the Panama canal. This is one of the largest orders of the character which has been let for clay products on the new canal. Shipments are being made daily, and several hundred cars will be required for transportation to the coast.

Alfred Yates, general manager of the Shawmut Vitri-fied Brick Co., has announced that the plant is being worked to capacity, and that during the last year orders have been received from all parts of the United States, Canada and Europe.

Announcement is made that a new brick plant will be built in the vicinity of Waynesboro, Pa., by local capital.

A charter has been issued to the Houtzdale Clay Co., of Houtzdale, Pa., the capital stock of which is \$25,000.

The Dillsburg Clay Products Co., of Dillsburg, Pa., has increased its capital stock from \$50,000 to \$150,000.

J. V. Bostwick, of Roxborough, Pa., has completed the formation of the Reliance Brick Co., with \$250,000 capital stock. T. B. Harned of Philadelphia, Pa., is also interested in this new company.

Recently the Bolivar Face Brick Company secured some additional holdings of coal and clay on the Indiana side of the Conemaugh river where their plant is located. The capacity there is about 100,000 per day and during October over 1,500,000 brick were manufactured. About 200 men are employed.

Many orders have been received and the company is doing a prosperous business. The company has holdings of about 900 acres of coal and clay, the development of which has just started.

Recently the Phoenix Fire Brick Co. took over a part of the holdings of the Bolivar Face Brick Co. on the Westmoreland side of the river and is operating the plant there under separate management. The company has secured large holdings on that side of the river.

Both companies are affiliated with the Ohio Face Brick Co., whose plant is located at Fredericksburg, Ohio, and which makes flue brick and brick for interior decorating purposes.

KANSAS CITY AND THE SOUTHWEST.

Kansas City, Mo., Nov. 28.—Frederick Winters, superintendent of construction for the Geo. A. Fuller Construction Co., which is building the new Union Depot in this city, made the statement the other day that by the middle of next summer they would have 2,500 men at work on the station site. The brick contract is reported to have been let, but no definite information has been given out as yet. It is a big contract of seven or eight million brick, and not very many of the brick manufacturers of this territory were willing to bind themselves up in so large a contract to run for a couple of years just at this time, when prices are so low.

There is a movement on foot here for the absorption of the Home Telephone Co. by the Bell interests, and it is stated that in case the city grants permission for the consolidation and gives a franchise there is to be a big eight or ten-story building erected to house the new plant which will be put in to take care of the big business.

Building operations at the present time are rather dull, and it seems to be the impression of contractors that they are going to have a hard time keeping their workmen together for the winter, as there will not be work enough to keep them busy. Some have a good bunch on hand, and are now busy with the outside work, getting them ready to put on the inside finish after the buildings are enclosed, and the weather is bad.

There has been no change in the price of brick. A good many of the Kansas plants have shut down, and nearly all of the Kansas City plants, but the demand has gone off at the same time to a point where the supply is still greater than the demand, and as long as this continues the price will remain at a figure which is not profitable to the brick trade. The Kansas plants which are now

closed down are generally putting in repairs and getting in shape to make an early run in the spring, and the Kansas City plants will make an early start in the spring also.

The Lyle Brick Co. is still running full time and is reporting its output well taken up. This company has been exceptionally fortunate throughout the year.

The Kansas City Hydraulic Pressed Brick Co. has shut down its Diamond plant, owing to the fact that the old strata of shale has been worked out. A shaft has been sunk to a lower level, and another shaft is to be sunk at once, 256 feet deep, to be used as the main shaft, and the shale from this lower level is said to be testing better than any used up to this time. Preparations are being made to open early in the spring and to use nothing but the shale from this new level.

The Alhambra Brick & Tile Co., of Alhambra, Ariz., has secured the contract for furnishing something like 400,000 feet of vitrified sewer pipe for Phoenix, Ariz.

The Standard Vitrified Brick Co., of Coffeyville, Kas., has decided to make itself independent in the matter of gas supply, and is securing a right of way for a pipe line which it is going to run from the new field being developed southwest of that city to its own plant. No gas has as yet been taken from this field, and the indications are that there will be a good supply.

The Laurel Brick Co., of New Orleans, La., is about to begin the manufacture of pressed brick on a large scale.

OUR BUCKEYE LETTER.

Columbus, O., Nov. 27.—All building and paving brick manufacturers throughout Ohio have experienced a very satisfactory business during the last month, and there is reason for believing that these conditions will exist until the end of the year, so far as the operation of plants is concerned.

In the Ohio Valley, the summer activity continues. Especially can this be said about the paving brick and sewer pipe manufacturers. The statement is now heard in many quarters, that 1911 will show very satisfactory gains over the record of business and sales for 1910.

The Newburgh Brick & Clay Co., the general offices of which are in Cleveland, began drilling for gas near the plant early in September, and after drilling for a month or so struck oil instead. The well flows regularly, and on Oct. 25 it flowed three times. The grade of oil, according to tests, is equal to that of Pennsylvania, No. 1, being about 42 to 43 gravity. As soon as possible and convenient the company will drill additional wells—for both oil and gas, for the results of the first well drilled gives assurance that a pocket exists somewhere in the vicinity of the plant. While drilling for gas, the drillers passed through a vein of salt measuring from 90 to 95 feet. The well was brought in on "Friday the 13th."

There is no busier concern in the Cleveland district than that of the Queisser-Bliss Co., which reports some very heavy sales on its "Golden Turkestan" rough face brick. Some of the largest contracts for building brick placed in the Cleveland district of late have been awarded this popular firm.

The new Ashtabula Shale Brick Co., Ashtabula, O., capitalized at \$150,000, will build a stiff-mud plant with a capacity of 50,000 paving block per day. The property includes 35 acres of fine shale requiring no stripping. The new plant will include a waste-heat drying system, and 10 rectangular kilns. A power plant of 300 horsepower will be installed. Thomas Fricker is president.

After an idleness lasting several years, the Turner Brick Co., of Sciotovalle, O., in the Portsmouth district has resumed operations, and indications are that the plant will be active for months to come.

With \$10,000 capital, the Huron Tile & Brick Co., has been formed at Huron, O., by H. H. Anderson.

Because of the increase in the demand for their product, the Ludowici-Celadon Co., at New Lexington, O., has been compelled to enlarge its plant and to increase the capacity at the same time. The demand for the roofing tile of this company has increased so much of late, that former facilities were such that immediate improvements were necessary. The product of this company is sold in every state in the Union, Canada and in many parts of Europe.

No bids were received for the plant of the Champion Brick Co., at Wellsville, when that property was offered at receivers' sale recently. Not a bidder was even present. The announcement of the next sale has not been made.

With a capital stock of \$10,000 the Malvern Fire Clay Co., of Malvern, O., has been formed. Among the incorporators are Oscar O. Allison, cashier of the First National Bank of Chester, W. Va.; George R. Henning, Canton, O.; Walter R. Elson, Massillon, O.; Harwood C. Ross of Malvern.

THE MIDDLE STATES.

We are informed that W. E. Lyon & Co., manufacturers of brick and tile at Carthage, Ill., have had a prosperous season and have found a ready sale for their product.

Mr. Henry Keiser has recently become the owner of the stock in the Francis Pressed Brick Co., Bloomington, Ill., formerly owned by O. W. Dunlap, who has conducted the business for the past twenty-five years. The plant is one of Bloomington's largest manufacturing concerns and has an annual output of 9,000,000 brick. Mr. Dunlap will devote his time to the sales department of the Dunlap Manufacturing Co., which handles "Hoagland's Oil of Gladness." T. S. Bunn, manager of the McLean County Coal Co., is the new manager and will handle the two positions at the same time.

For the first time in the history of the company, the plant of the Summittville (Ind.) Tile Co. has closed for an indefinite period.

We are informed that the new organization, the Marshalltown (Ia.) Sewer Pipe & Tile Co., has about completed the rehabilitation of the old pottery plant and will soon be in shape to begin operation.

The Jefferson Brick & Tile Co., of Jefferson, Wis., recently installed a new style of drying sheds in its yards. Last spring the company installed new portable carriers and next spring it will be better equipped than ever to increase its output.

The force of workmen at the Sioux City (Ia.) Brick Co., has been materially reduced and extensive operation will be suspended until January 1.

THE SOUTH AND SOUTHWEST.

Lawrence, Kan., Nov. 24.—Three million dollars worth of brick and tile are turned out every year by the Kansas clay industries. This amount could be increased many times if the commercial value of the clays in the state were known. To test these clays and report upon their usefulness will be the work of the clay laboratory just being completed at the State University. The Department of Ceramics will also report upon the value of the clays for making pottery. The classes in clay modeling have turned out many beautiful and durable articles made from the Kansas clays.

The Seneca (Kans.) Brick Co. is reported to be doing a good business in hollow tile. The Buser Bros. came over from Germany about a year ago, and began to make tile at Seneca. They make about 15,000 brick a day, and sell them as fast as made.

The Mangum (Okla.) Brick Co. has added many improvements to its plant. They have improved their railroad facilities by putting in tracks on both sides of the plant, and added many other improvements, greatly facilitating the manufacture of their products.

We are told that the brick plant at Bridgeport, Texas, is being considerably enlarged and is turning out a very good quality of common brick. It is planned to manufacture pressed brick and vitrified paving brick, the machinery having already been installed.

The Mexico (Mo.) Fire Brick Co. is running to its full capacity and is unable to supply the demand, and recently were obliged to turn down a \$10,000 order. The company is making permanent improvements, which will greatly increase the output of the plant.

John S. Davis, one of the pioneer brick manufacturers of Montgomery, Ala., died in November at his home, at the age of 78 years.

Wickliffe, Ky., is getting into the lime light recently on account of the large deposits of clay which have been discovered there. The plant of the Wickliffe Clay Prod-

ucts Co., we are told, is running full time on tile, and will continue to do so until the first of the year, when it is understood the company will manufacture other clay products, for which purpose the capacity of the plant will be doubled. The citizens of that locality often remark as to the larger quantity of blue clay that is shipped to St. Louis and made up into ware there, while it seems to them it could be just as well manufactured in Wickliffe, effecting a saving of hauling of the clay.

THE FAR NORTHWEST.

The Coast Clay Co., South Bellingham, Wash., greatly enlarged its plant, and will soon have an output of 1,000,000 brick a month. The quality of the product is said to be equal to any on the Pacific Coast, as the shale used by this company is said to contain no alkali—the bane of most coast brick manufacturers. This means that the brick from this plant will not whitewash and streak, but will retain their deep red color. It is said that the shale is similar to that found near Canton, O., and Baltimore, Md.

William A. Doyle, the general superintendent of the Coast Clay Co., was instrumental in locating and founding the Renton Clay Co., some years ago, the plant of which, later, became the largest of its kind under one roof in this country, employing about 450 men.

While the kiln capacity of the Coast Clay Co. at present is confined to 85,000-capacity kilns, the plans for immediate improvement provide for 12 kilns with a capacity of over 1,000,000 per month. At present the company is unable to supply the demand for pressed and paving brick. The officers of the Coast Clay Co. are: N. C. Griswold, president; H. A. Doyle, vice-president; W. P. Brayton, secretary-treasurer and W. A. Doyle, general manager. The company is fortunate in having the services of Tim Courtenay as head burner, who was with the Renton people for many years, and has the reputation of burning the best paving brick on the Pacific Coast.

The plant of the Beaverton (Ore.) Clay Manufacturing Co., which was in the receiver's hands for several weeks, is again in operation. The workmen have been settled with, and it is thought the troubles of the company are over for the present. The officers of the company are: J. A. Mott, president; Charles Kursey, vice-president; A. T. Lewis, secretary, and B. Randalls, treasurer. This plant was fully equipped for the manufacture of brick and drain tile, and when in full operation about 100 men were kept employed, so that the citizens of Beaverton are anxious to have the plant in operation again.

Mr. John F. Slater, proprietor of the Gilman Brick & Tile Works, contemplates the formation of a new and larger company to handle the business. Mr. Slater has invented a grateless fire box for brick plants and has recently installed it in the plant of the Reliance Brick & Tile Co., at Belle Plaine, Iowa. He intends enlarging his plant in order to increase the capacity.

Estimates of builders and dealers show that Portland, Ore., consumes annually 40,000,000 brick. This includes both common and face brick. The ratio of home production to imported, is approximately 80 for the home factory, and 20 for the imported. In preceding years, only 40 to 50 per cent of the pressed brick used in Portland came from Oregon plants, while now it is stated that Oregon produces from 65 to 70 per cent of the pressed brick used.

The Columbia Brick Works, 256 Hawthorne avenue, Seattle, Wash., are furnishing the brick for the new Cook hotel at the corner of Third and Main streets, Seattle.

We are told that Mr. Eisenschimer of Berlin, Canada, will establish a plant for the manufacture of tile on the Island of Orleans, Canada, where he has bought a large tract of land.

HOOSIER NOTES.

Indianapolis, Ind., November 25.—The local brick market is fairly good, considering the season of year. There is not much foundation work for dwellings at this time, but a number of large contracts have recently been let while still others will be awarded soon. Prices are said to be steady and equal to those of a year ago. A large number of brick plants over the state have closed down

for the winter, but all appear to have a large stock on hand to meet the winter trade.

Thomas A. Winterrowd, city building inspector, has returned from Chicago where he went to study the building code of that city. Mr. Winterrowd is at work on a new building code, which among other things, will require that all buildings erected in the down town district, known as the mile-square, shall be fireproof.

Announcement has been made by the Fletcher Realty Co., that it has given up plans for a twenty-one story brick and steel building in Washington street and the site has been leased for ninety-nine years to Bert McBride, president of the Security Trust Co., who will erect a ten-story brick and steel building to cost \$100,000.

Among the contracts recently received by the local office of the Western Brick Co., have been: Theatre for William Hauelsen in Indiana avenue, 200,000 common brick; public school building No. 63, 35,000 red sand mold face brick; International Metal Polish Co. one-story factory building, 125,000 common brick.

The Bedford Stone & Construction Co. has received the contract for the masonry and fireproofing in the sixteen-story building to be erected for the Merchants National Bank. It is understood the company will do the brick work itself. There is no general contract for the work, separate contracts having been let for each part of the job.

Mayor Shank, members of the board of public safety, Fire Chief Coots and Superintendent of Police Hyland will leave in a few days for Louisville, Cleveland, Cincinnati and Columbus to inspect fire and police headquarters buildings. Similar buildings, of pressed brick construction, are to be erected in Indianapolis. J. T. Johnson, who probably will be architect for the buildings, will accompany the party. The Board of Public Works will let the contracts.

Henry Dollman has received the contract for a one-story brick factory building to be erected in Fort Wayne avenue for W. H. Johnson & Co. at a cost of \$13,500.

J. H. Zinn, local representative for the Dee Clay Manufacturing Co., has returned from a business trip through southern Indiana.

The General Construction Supply Co., 413 Castle Hall Building, is acting as agent for the Atlantic Terre Cotta Co., which has five plants in the Eastern and Southern states.

SCREENINGS.

We are informed that Edward B. Reed, a representative of the Clearfield Brick Co., Clearfield, Pa., is negotiating with owners of property in the vicinity of North Tonawanda, N. Y., for a factory site, with a view of establishing a plant for the manufacture of brick. The Clearfield Company has been shipping large quantities of brick to that locality, and for that reason has thought it advisable to establish a plant.

Philadelphia, with its low buildings and extensive district of two story brick dwellings, is said to rank first among the large American cities in comparative immunities from fire losses, though deplorably deficient compared with European cities.

That the Alberhill Clay Co. at Elsinore, Cal., is shipping great quantities of clay is proven by the report of the local Santa Fe agent, who reports clay received from the concern for October amounted to \$11,658, while for October of last year only \$6,576 was received.

AMONG THE NEW ENGLANDERS.

Berlin, Conn., November 26.—The demand for brick this fall has been very good throughout New England, prices varying from \$5.25 to \$5.50 per thousand. Business conditions warrant \$6.00 brick today but the policy of the manufacturers seems to one of hesitation in regard to asking more for their product.

There is a good demand for "light hards" in Boston. Hollow brick are bringing \$7.00 at the yard with a fair market.

R. O. Clark of East Berlin, Conn., has been elected trustee of the bankrupt estate of the New Britain Brick Co., New Britain, Conn.

The New England Steam Brick Co., with offices in Provi-

dence and yards in Nayatt, R. I., have gone into bankruptcy. M. J. Houlihan has been appointed receiver.

Plans for brick buildings in this section include an eight-story hotel in Haverhill, Mass., 8½-story factory building in Brockton, Mass., three buildings for the Eastern Gas Co., in Portland, Me., 11-story mercantile building in Boston, together with many public and society buildings. New plans show very plainly the return of brick as a successful and popular building material.

The large plant of the Stiles & Reynolds Brick Co., located in Berlin, was visited by fire, destroying a New Haven machine, clay conveyor, dynamo and building which they occupied. The loss was fully covered by insurance.

In our last issue the statement was made that the New England Brick Works would probably reorganize and continue to do business as before. This statement was rather misleading, as the item referred to the New England Steam Brick Works of Providence, R. I., which has no connection whatever with the New England Brick Co., of Boston, Mass.

Pressed brick is being used for the construction of the new Erie freight offices and station at Binghamton, N. Y. Both the front and side walls will be made of pressed brick.

We are informed that Samuel B. Felker of Rochester, N. Y., is preparing to establish a brick plant near the Worcester, Nashua & Portsmouth railroad tracks, at Rochester.

We are told that the Wilson Brick Co, Wilson Station, Hartford, Conn., is planning to install equipment for burning with oil instead of wood. Frederick W. Kimberly and F. H. Young have been visiting several New Jersey plants where oil is used as fuel.

THE CHICAGO SITUATION.

Chicago, Ill., Nov. 28.—A taste of real winter has already come to the Windy City, and while it has not been severe, it has given the clay operators and the building fraternity a taste of what is to be expected within a short time. Still the weather has not as yet put much of a damper on the situation, though there has been a tendency shown to curtail somewhat the letting of new contracts.

If a comparison is to be made in respect to the number and cost of building permits issued during ten months of the year, this city takes the lead in amount, and is only exceeded by one other as to number of permits. This makes a most creditable showing, though the amount of money represented is smaller than it was last year. The percentage of loss as compared with this period a year ago is 18, though in this respect also it is not out of line with a large number of the other large cities. The number of permits for the year, so far, is 1,082.

While the brick situation looks very fair as yet, there is an inclination on the part of some of the operators to curtail their operations, and to make preparations for the annual "shut-down" of the plants. Most of the plants are in operation at this time, but many are planning to close earlier than last year. From reports it now seems to be more than probable that few, if any, will operate much after the first part of the present month.

The stocks of brick now are fairly large, and the same will be increased rather considerably before the final close down. In this way there will be a sufficiently large amount on hand to take care of the winter demand and the early spring orders.

Orders for face brick, terra cotta and other building lines and materials are in as active a way as could be hoped for this late in the year. Most of the operators and the dealers feel very well over the demand that has been noted within the last month, but they do not count on much new business for a month or so. Of course there will be the same effort put forth to secure business as has been noted of late and the activity should count for something that will mean future orders and a nice business when the orders become active once more.

There is the usual scramble to "get under cover" that is noted at this season of the year in buildings of more than ordinary size, and progress in this respect is being noted in the down-town section and elsewhere. There is a fair amount of what might be termed smaller work under way and the outlook is not so unfavorable, if we are to rely on reports. The sections outside of the city have

been making a very favorable increase in building and the year will mark a step forward in this direction.

The Carey Brick Co. will continue to operate for a short time, but will soon close down for the winter. There is still a very fair call for building brick, and the year has not been so backward as it might have been. It has had its ugly sides, of course, and there is no denying that, but there is not anything like complaint heard at this quarter. This company has a very fair stock of brick on hand, and will operate until the weather sets in for a stay of real winter.

Mr. Bonner, of the Bonner & Marshall Co., has been ill for a short time, though not seriously. He is expected back at his desk in a short time. This company has been keeping rather busy, and has a number of very favorable orders to fill this year. Among these might be mentioned the glazed brick for the interior of the new lion house at the Lincoln Park Zoo. Other orders are sufficient to keep the company well pleased with the present and the future looms very fair.

Everything looks lovely at the office of the Chicago Fire Brick & Retort Co., and according to Mr. Reed, president of the company, there is no possible cause to find fault with the present year's demand. He expects to keep moving right along in the usual way, and will take orders just as has been the case in the past months of the year. Things look as favorable as one could expect, and the company is getting its quota of business.

The Thomas Moulding Co. note that the situation is less active than in the past, though there is some business to be had all the time. However, the report from Mr. Coombs is to the effect that it requires hustling to land any considerable amount of it now. Still while there is business to be had this concern gets its share, and there is no reason for finding fault with conditions which it is not possible to regulate.

The Hanreddy Brick Co. is still doing a nice business in building brick and looks for a continuation of orders for a time as yet. The plant is still in operation, also, and the outlook, considering the season, is far from being unfavorable, though the orders are less active than was the case a few months ago.

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VOL. XXXIX
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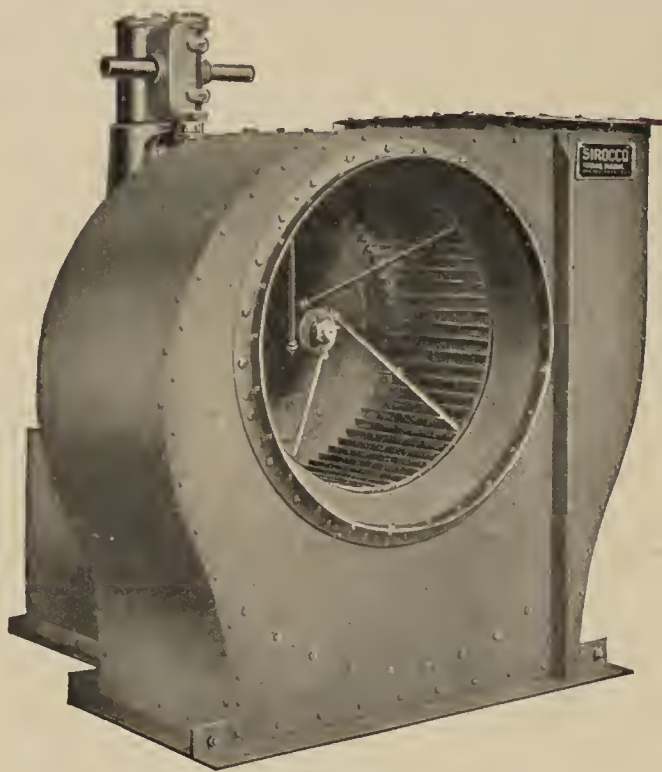
Table of Contents

Page	Page
Downey and Blake.....Frontispiece	Sumter Brick Works.....462
The Boss and the Business. By Daniel Vincent Casey .....445-450	The Superintendent—Your Troubles Are Our Troubles—More Light and Ventilation—Liability for Injury to Employee.463-464
Brick in the Lime Light.....451-452	The Paving Brick Industry—Natural Base Brick Pavement .....465-466
Kiln Flue Regulation. By Dwight T. Farnham .....453-455	Drain Tile and Drainage—Economy of Expense—Woodland Clay Co.....467-468
Letters of Appreciation.....456	Annual Report of Harbison-Walker Co.....469
The Same Old Story.....457	Sand-Lime Department—Hydrated Lime....470
Cost of Brick Construction.....458	Recent Inventions .....472
Forty-two Chambered Kiln—Who Is To Pay? .....459	Preparation of Clays.....471
Editorial Comment460	Trade Review473-480
Coming Conventions—Wisconsin Day at the Show461	

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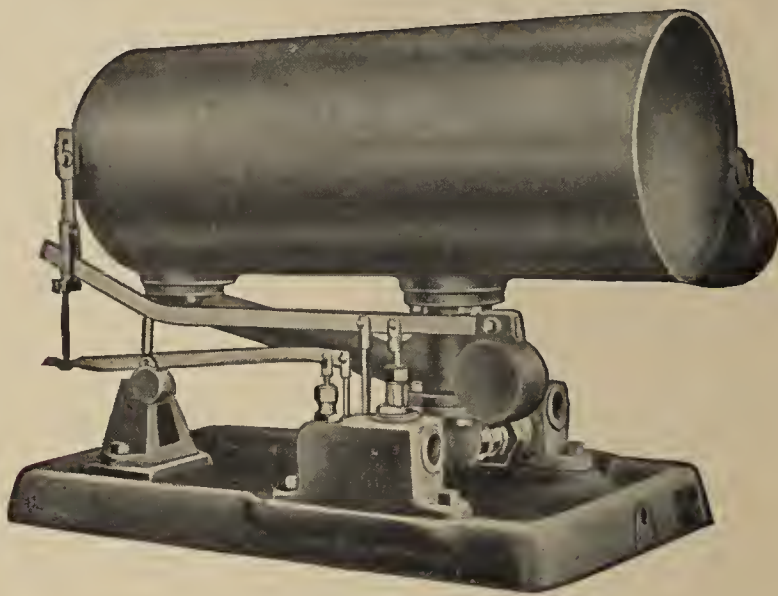
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See Page 445

“We’re up against a condition we can’t change—transportation. We’ve got to move or shut down.”

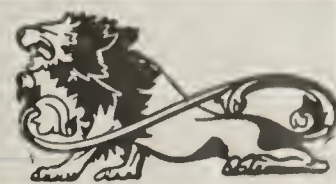
(Illustration accompanying our new serial story “The Boss and the Business,” beginning in this issue.)



VOL. XXXIX—No. 12

BRICK

AND CLAY RECORD



DECEMBER 15, 1911

THE BOSS AND THE BUSINESS

Incompetence Threatens the Launching of a Young Industry: Youth, Courage and Native Wit Intervene to Save It: Taking the Overload Experience Should Have Borne

By Daniel Vincent Casey

Scolding as it climbed, the switch engine labored up to the main track, a string of laden cars in tow. In the minds of both watchers on the bluff above was the same thought. Not till the brakeman, locking the switch and signalling the driver, swung aboard the rear gondola, however, did the elder man give it words:

"There's where we lose out, Matt," he observed solemnly. "You can't make brick or tile any more without a railroad handy. Transportation is one thing you can't dodge or fight. We've got to move or shut down."

Absently he followed the receding train, symbol of the change he lamented. Rounding the shoulder of the upland, it flung back a sharp crossing whistle as a challenge and good-bye.

"When your dad and I began after the war," he resumed as they turned to the trail across the fields, "the gravel road was the only path to market. Farmers thought nothing of driving twenty miles for our stuff. I sold tile in four counties; your dad did the same with his brick. Now," his lips compressed at the thought, "neither of us covers more than three townships, do we? Why? Because we're two miles from the railroads. Teaming both coal and products, we can't compete on shipping jobs."

The young man's powerful shoulders lifted in a shrug.

"I can't compete in the local market," he confessed. "The Capitol people back yonder are selling their 'seconds' now for a shade less than my stuff costs me. For most purposes, they're better brick than mine—larger and harder. The flat cars on that train we saw were loaded for town, the 'boxes' for Chicago or St. Louis. My finish"—his laugh was short, despondent—"isn't hard to see."

"Nonsense." Sympathy, a feeling even warmer, colored the protest. "Your brick-yard is one proposition, Matt Blake. You yourself are another. I've been after you for three years to run one of my Iowa factories for me. You can have the Preston job tomorrow if you want it. Out there"—the grizzled chin tilted aggressively—"the railroad runs smack through my land."

Somber though his mood, the final boast brought a smile to Blake's lips.

"That's mighty good of you, Mr. Downey," he declared, "and I'd certainly like to take it. But I want to

stay in business for myself, and I don't care"—pride forced the note—"to fall down in any game I tackle and quit without a second try."

The veteran chuckled. Besides a genuine liking for his young neighbor, dating from the latter's barefoot days, he coveted for his own ventures, the initiative and resourcefulness which had nursed the little brickyard through its recent difficulties. Against the handicaps of isolation and the peculiar Capitol rivalry genius itself could make no head.

"I don't mind telling you," he confided as the brick maker held open a gate for him, "that my own plant hasn't made a dollar in a couple of years. More than that, I know it never will. I've hung on simply because I hated to see the home plant closed and my old gang hunting work."

"So if you're a failure"—his hand found Blake's shoulder, gripped it as they walked a little space together—"I reckon I'm something worse. But I don't blame myself; neither should you. We're up against a condition we can't change—transportation. Since it's fatal, let's recognize it. Let's stop doctoring our dead horse and get us a new one, Matt. When I came over to see you today, I was debating whether to open up next month. I see my way clear now: I'll not. And I advise you not to, son. It's a losing game, and there are better things waiting for you elsewhere."

The brickmaker shook his head.

"My capital's tied up in the yard," he explained. "There's a thousand dollars in stock, but the sheds and equipment wouldn't stand moving. If I shut down"—he hesitated, glanced at Mr. Downey—"I'll have to take that Preston job."

"And you wouldn't like that." The older man's instinct was keen; the regret Blake strove to hide did not escape him.

"I ought to be thankful for the chance," the young man acknowledged warmly. "I've been my own boss so long it has spoiled me. And you shouldn't forget," he counseled, "that I'm a brick yarder, not a tile man."

"I'm not forgetting." Mr. Downey assured him. "The trades are so much alike you can learn the technical part in three months. After that, it's a matter of common sense and ability to handle men. You have intelligence; you dig down to the roots of a matter before you decide; men will work for you. Those are the essential things in management."

"I'll take all the risks," he added jocularly. "You'll

Note—"The Boss and the Business" originally appeared in "System," the magazine of business, as a series of independent short stories. The publication rights have been purchased by us and the story revised, enlarged and continued to a dramatic climax by the author especially for "Brick and Clay Record."

be your own boss at Preston; I'll not bother you for at least a year. You'll find plenty to do out there. The shop is making money, but not what I'd like."

They had come to Blake's clay pit, the lower end flooded by the early spring rains. In silence they skirted the yellow waste and made their way between drying sheds to the kilns. In their owner the familiar, weather-beaten things stirred a sudden nostalgia. Refusal was on his tongue.

Sensing it, Mr. Downey amended his proposal instantly. Finding a manager for the Iowa plant was incidental to his main purpose—to capitalize and employ his neighbor's brains and energy. Opportunity, he knew, was not so rare as the constructive man.

"If Preston doesn't strike you, Matt," he suggested, "we might start a factory nearer home. I had Warren, over here in Mercer county, in mind when I went to Iowa. The clay's O. K. and the location's everything you could ask—two railroads, flat country all about, farmers alive to the advantage of drainage. Plenty of little factories, but no one equipped to make larger sizes within fifty miles.

"It's the big stuff that runs into money, you know." Blake's interest encouraged him. "Five years ago, there wasn't much of a market for the 16 to 30 inch tile they're putting into county ditches now; that's why I preferred Iowa. Drainage has taken a big jump since, and farmers have learned that land's too valuable to waste on open trenches.

"My idea would be to furnish all this big stuff within certain limits and keep the mill busy on smaller sizes. Selling the main ditches, we'd naturally have first call on the feeder jobs. In fact"—he whipped out his offer decisively—"it looks so good to me that if you'll join me, I'll put up a mill."

Blake kindled to the prospect. Warren was virtually next door. Success would wipe out the stigma of failure at home. The chance was alluring. If only—

"I couldn't raise more than two thousand dollars, Mr. Downey." He forced himself to be practical. "I can't qualify."

Partnership had not been the tile man's intent. He saw it now as the only means of winning Matt's cooperation. After all, the youngster's capacity was worth more than capital. He plunged.

"I'll find the money," he promised cheerfully. "I'll take your note for a quarter interest; you can pay it out of dividends. I figured on a \$15,000 plant five years ago; what do you say to a \$20,000 company?"

Blake stared. The offer was generous beyond the credible. Doubts of his fitness to handle such a business beset him. When he mastered his emotion it was to bring objections—his own lack of experience, the risks involved, the unequal hazards.

Resolutely Mr. Downey waved them aside. In the end Matt yielded, shook hands on the partnership. One thing he insisted upon—an apprenticeship at Preston while the new factory was erecting, six months study of details at close range. To this his senior consented; in a sense he was under obligations to a construction boss living in Warren—the builder of several tile mills—who had brought the location first to his notice and had prompted the town's offer of free land.

"Go ahead, Matt," he agreed cordially, "I'll build the plant; you learn to run it. Understand now that you're responsible for what happens at Warren. I've never made big tile. I've never sold them. I'm too old to learn either game. So it's up to you. You're boss. It's your business. Build it, son."

II—Management Unceremoniously Thrust Upon Blake— He is Equal to the Occasion.

Blake mastered his dismay. Survey of the half-built factory had revealed, sudden and disconcerting, what burdens fronted him as manager. Not merely was progress backward and the incompetence of the builder visible at every step. The alarming disclosure was that Mr. Downey had neither hurried nor corrected him.

To the young man, his partner's experience had stood as the chief asset of the new business, assuring knowledge and resource distilled from forty years of tile-making. Yet now, with no training except three months' labor and study in lesser mills, his own sagacity had disclosed in their brief tour of inspection, a dozen errors in construction or arrangement, and each blunder a threat of failing counsel in emergencies.

Between wonder and distress, he made no comment as the foreman led them about. So divergent the viewpoint indicated by his questions, however, that Mr. Downey, taking umbrage, sent the other away and drove brusquely to the core of the latest difference.

"You can't put the press on the second floor," he challenged. "It weighs eight tons." This press was an upright monster, the reason for the new factory, the machine which would give it precedence over every establishment within fifty miles. Swallowing tempered clay, it would spew out tile of all diameters between twelve and thirty inches, leaving the smaller sizes to an auger mill like those in operation in the rival plants. Its weight and bulk, the speaker's tone proclaimed, forbade its elevation.

For Blake, the protest supplied the key to the conditions about him. It defined the limits of his chief's horizon, suggested why the foreman's bungling had gone unchecked. A small-tile manufacturer all his life, habit framed Mr. Downey's thought in terms of his familiar ground-floor factories.

Like the construction boss, the new mill presented to him only the old problems projected on a larger scale. Whereas—! Blake recognized a crisis, sloughed off doubt and diffidence. The nearest masons were beyond earshot; better come to an understanding, and establish his control in questions of production at once.

"The auger mill will be set on the ground floor," he explained, indicating the pit and piers prepared for it. "Boosting the press to the second story will cut out elevators on two-thirds of our stuff. It'll shorten the lift to the third-floor drying rooms by half and give us plenty of working space around both machines. You can figure how much we'll save yearly in power, time and labor."

Startled by the simplicity, the obvious advantages of the change, the elder man checked each claim before replying.

"Will it be safe?" he objected.

"There's a second-story installation at Warsaw, up in Hotchkiss county. Maybe you know the owner—Spencer is his name. 'Brick' described it about a year ago. The press people furnished the steel supports." Mr. Downey crushed a lump of clay under his heel. He shook his head. Annoyance set a pucker between his brows.

"See anything else wrong?" he rasped. "I've let this fellow, Esher, have his own way about everything. I thought he knew."

The young man considered. Time was now the important element in the building of the plant. When he had abandoned his own little brickyard in the spring, tempted by the offer of a quarter interest and virtual control here at Warren, the plan had been to begin production before the fall ditching season opened. A novice in tile making—his energy, aptness and skill in handling

men were the qualities Mr. Downey coveted. Experience would come with work and observation in other tile plants.

He had chosen the school of hard knocks, ranging up the scale from clay shoveller to machine boss and burner at one of the Downey plants in Iowa, learning the technic of each process by actual experience, rounding out his knowledge of arrangement, kiln management and production by Sunday excursions to neighboring clay manufacturing centers. Tomorrow he was due at a big Indiana factory where he would pursue a like study of methods in the making, drying and burning of the larger tile, Mr. Downey was intent on manufacturing. This visit to Warren had been without a specific purpose—other than to look things over and consult with his chief—before the dawdling and the lack of plan disclosed themselves.

"Nothing that can't be fixed," he answered cheerfully. Tact must be employed in opening his partner's eyes without seeming to criticise. His own part was clear. His big-tile inquiries must wait; the need of a firm hand and a sharp stick here at home was imperative. For a month at least his place was at Warren—until the working force could be organized and discipline established.

Dismissal of Esher, he judged, might disrupt the crews and waste further time. Wiser, perhaps, to retain the foreman and trust his own wit and activity to prevent mistakes and speed up the laggards. Backward as construction was, he determined that the mill should be ready before fall ditching began. The business needed the profits of the approaching season and the prestige and inspiration of the flying start.

Strategy in Man-Handling—Blake Assumes His Overload.

Mr. Downey nodded gloomily as Blake named his alterations, sketching the reason for each.

"Do what you like, Matt." Chagrin clipped the tilemaker's speech to bare essentials: "Give Esher his time and take hold yourself. He's been stringing the thing along to hold his job till Christmas."

The young man outlined his compromise.

"Brick laying's the thing that counts"—thus he analyzed the situation—"the masons will say whether we start up in September or drag along until spring. For seven high-priced men"—his glance swept the enclosing walls—"they haven't made much headway."

"Well, my idea is to jump in with them and wake them up. We must have two kilns to begin with. With the stack and the buildings, that means 350,000 brick to lay in seven or eight weeks. To make it, I'd like to keep Esher and put in all my time with the masons.

"Yes"—he smiled at the doubt in the other's eyes—"I think I can supply the ginger. I've used a trowel some at home and I helped rebuild the kilns at Preston. Since I'm only a beginner these fellows will guy me the

first day. After that"—the line of his jaw hardened—"they'll have to follow my pace or be laughed out of town as dubs."

Thoughtfully Mr. Downey ground another clod to powder. He was discovering unsuspected qualities in his partner. He felt himself out of focus, vaguely uncomfortable.

"If I take hold as manager"—Matt bridged the lull with fresh reasons buttressing his position—"every man in sight will work against me. They'll naturally take Esher's side. He's their neighbor. He hired them. He's been an easy boss. The town will follow suit and sympathize with him. Even if we hold our skilled men, they'll soldier at every chance. And when the mill's ready, gathering a good force will be difficult.

"Don't you see"—for the first time Mr. Downey measured his own powers against the pull of Blake's personality, the urge of his splendid strength, enthusiasm, youth—"that I can do more good as a bricklayer than as boss? Tell Esher that I'm your partner, that I'm going to run the factory, that things must shape up as I say. That'll be enough, I believe, to crowd him into line."

"Go ahead, son." The older man had finished his inventory, his appraising, his adjustment. His face cleared as he fished out a massive ancient watch. "I'm heading home on the two-seventeen. I'll come back the day you load your first car of tile. I promised you a free hand here when we started up. You get it right now."

Genuinely exercised, Matt protested. This was his first hour at the factory; the task of completing it by early September looked a big task for two men. His knowledge of construction, of installing machinery, was based more on observation, than on practice. He was counting even now on a month or six weeks to spend in big tile-plants studying processes, equipment and methods. Acceptance of full responsibility would

cancel the most vital period of his training. Earnestly he reviewed these considerations, hinted that Mr. Downey's withdrawal was unfair to the business.

His anxiety salved the other's hurt.

"It's for the sake of the business that I'm leaving you alone," declared the older man. "You're young enough to learn by your blunders; mine only frighten me.

"You've heard me speak of my friend Jimmy High," he continued after a moment's pause. "Yes, the implement man. He's got the biggest factory in the state, but he ran the whole works himself until last year. Kind of cocky about being a good man at sixty. Said his three boys would have to wait until the old man was laid away to get their whack at things.

"Just the same, Jimmy quit overnight last April.



Matt Blake,
The Junior Partner—He Was the Real Boss.

Cleaned up his desk, ordered the boys to get busy and moved out on his farm for keeps. Told me about it last time I saw him. It was like this:

"Jimmy decided about two years ago that the corn planter he had been making for ten years was too heavy and cost too much to build. Began to improve it: kept experts six months on the job. The boys kicked on about a dozen changes he made; but Jimmy had his own way. Put out about twenty of those planters last spring. Fourteen of them broke down. So did Jimmy. Threw up his hands the day the fourteenth was reported dead: turned the business over to the boys next morning.

"They were willing enough to take hold, but wanted him to continue as big boss. But Jimmy wouldn't hear of it.

"I don't care a rap about those planters," he told them. "What scares me is that my judgment went back on me. I could putter along here for ten years more. I'd never be sure of myself, though; and you fellows wouldn't have nerve enough to throw me out or chloroform me. Even if I didn't make a mistake that would wreck the business we'd be four old men plodding along together, instead of three boys in a race, with their dad loping along behind in a buggy full of wet sponges."

"That's my case, Matt." Grimly Mr. Downey ended his parable. "I can't help you except with money and my credit. I can hinder you with outworn, fool questions. But I'll not; by George, I'll not. I've never made big tile or sold them. It's been my dream for fifteen years to do both. But I guess"—the full voice faltered, an instant—"I'm too old to learn. So it's up to you, Matt.

First Step in Control—the Masons Fall Into Their Own Pit.

Trial of the young manager's mettle came immediately. Esher nursed a grudge. Mr. Downey had not spared his vanity in ordering Blake's alterations carried out, in defining the latter's status. His nominal authority remaining however, the builder assumed the partnership to be only a pretext for interfering. In Matt's decision to turn bricklayer, he perceived a chance to retaliate, perhaps to discredit him should he fail to "make a hand."

A hint to the masons—barbed with the least touch of raillery—was enough to rouse their craftman's jealousy. Before Blake had cleared his first board of mortar, flying sarcasm made him aware of this hostility. As he swung into the brisk rhythm—scoop, swish, clink, scrape—he realized that he was in for more than the usual worker's hazing, the top pace with which skilled men test every newcomer's quality and courage.

He had begun with the trio running up the dry-shed walls, since their progress fixed that of the carpenters. Instead of regulation building brick, they were laying paving "seconds," huge ten-pound block which taxed even their seasoned strength to handle.

Matt's training on the home yard saved him. All his life he had been lifting and carrying a pair of ordinary brick in each hand. The exercise had developed fingers and forearms beyond the normal. For two hours, therefore, manipulation of the heavy pavers gave him less concern than his inability to "head up" their wide ends with one stroke of the trowel. The inexorable call of "line up" caught Blake again and again setting his last block. Hardly had he acquired the knack of spreading the mortar when the mutiny of his muscles began.

Wrists, arms and back went numb under the torment finally. Fatigue he had often felt, but never before this crippling loss of sensation and power. By eleven o'clock he was groping for brick and mortar, each movement demanding a separate impulse of will and brain. Lines

graved themselves either side his mouth, but he held doggedly on. When noon released him, the masons, themselves over-tired, had a lively respect for his nerve and endurance. The first skirmish in the battle for control had been won.

Blake's pluck gained him an unexpected ally. Like every other man on the job, old Galbraith, the head carpenter, had watched the baiting. In him, however, the gallant resistance stirred desire to help. To break the ordeal of the afternoon, he called Matt at intervals to inspect alterations he was making and detained him with arguments. His pugnacious manner deceived Blake as well as the bricklayers: the fifth conference was cut short with a curt order.

Galbraith spat defiantly, squinted at the shadows, caught up his hammer.

"All right, Mister Blake," he rasped. Then with a blithe, transforming wink, "I reckon now you can finish the day."

Back to his drudgery, Matt went heartened and serene. Bodily distress could not touch his spirit. The carpenter's adherence, the human kindness prompting it, were omens.

His boards were clear of mortar when a distant whistle sounded six o'clock. Deliberately, under the eyes of the masons and helpers, he measured the day's progress. They fell silent as he counted the rows laid, and calculated the individual totals. Simple as the action was, it drove home the distinction between his relation to the work and their own. It was not to satisfy curiosity: this was his business.

"I make it thirteen-hundred apiece for you fellows," he announced buoyantly. "That's two-fifty better than my tally."

The foreman was below, drawn by the belated grouping on the scaffolding.

"Hello, Mr. Esher." Satisfaction colored Blake's salute. "We smashed your daily average seven ways for Sunday. You thought a thousand pavers a big day's work." The masons shot startled glances at one another: too late they saw the trap their malice had led them into—"Well, Burns and Howell and Pick here laid thirteen hundred apiece today. That's going some, don't you think?"

"I'm away behind myself," he mourned. "Soon as I limber up, though, I'll lay my thirteen-hundred too. I'll try and keep even"—he smiled at the unhappy masons—"unless these experts here go on breaking records just to keep me in my place."

The Encounter With the Foreman—Blake Takes Command.

The discomfiture of the masons taught the foreman caution. Blake's motives escaped him, however. To put off the unavoidable quarrel until he had both work and workers fairly in hand was the manager's thought. He consulted Esher, therefore, at every step, left all routine orders to him.

That the builder should misconceive forbearance and allow his first anger to harden into a guarded antagonism, troubled Matt. The undercurrent of censure in the village, the latent ill-will of the men, he traced to the foreman, but could lay hold of no specific offense, so subtly had the fellow intrigued. What with laying brick and meeting his crowding problems he had no time to speculate. Sooner or later Esher's temper could be trusted to put him flagrantly in the wrong.

Ten days on the dry-shed walls drove the mason gang far in advance of the carpenters and established a minimum daily task of twelve-hundred paving block. Blake, meanwhile, had kept the kiln builders under observation.

One of them, a squat gray-jowled Englishman named Lane, set the pace on the circular side walls, scoffing at the three specialists whom Esher had brought from St. Louis. Crowning the kiln with a thirty-foot dome unsupported by false work, however, was beyond his experience. To avoid possible faults, Matt withdrew him, gave him a helper and set him raising the seventy-foot stack which would serve the first group of four kilns.

Freed of their pacemaker, the St. Louis men loafed through three leisurely days. The fourth morning Blake amazed them and the entire gang by relieving the hod carrier who supplied the crown builders. It was drudgery to which no skilled man on the job would have stooped; all the masons except Lane punished his sacrifice of caste with jeers. He had his reward at evening, however—the results almost doubled the average of the previous days.

More, Matt had learned the secret of such construction—the art of keying each course firmly in place with old-fashioned cut nails, and then filling every crevice with mortar as the next course was laid. What Lane had been reluctant to attempt, his habit of observation had mastered in a day. Next morning the helper recovered his hod. The manager began with the masons.

Simmons, the ablest of the three, protested immediately. This was no work for a beginner. The stability of the kiln hung on the skill with which each brick was placed.

"We'll not stand for this monkeying," he blustered, throwing down his trowel. "Our reputations—"

Blake's gesture stopped him.

"Look here, Simmons,"—the other men looked around, so crisp, so decisive was the address. "This is my kiln. Let that fact soak in, will you? Remember, too, that I am buying a thousand dollars' worth of fire brick from the people who get you fellows your jobs. Then figure what they'll do to you if I cancel my order and name you as the cause. Think it over, all of you, while we lay a few brick."

Thought was a long process: the protest was not renewed. Despite Esher's assurances, this youngster might be the real boss.

By Saturday—this was his third week at Warren—the crown was so near completion that all were working feverishly to close the remaining gap and make the dome safe against accident. Summoned away by Galbraith, Matt took time to examine the dry shed wall, now at the third floor level, before returning. Overlooking the kiln, he noticed Esher on the crown, and the masons in attitudes of listeners. As he watched, they broke into laughter and resumed their tasks.

Circling back to the kiln, a little later, he was vexed to discover the foreman still on the platform. In such cramped quarters he was bound to hinder. Indignation succeeded; the fatuous fellow was relating a comic story. Not the first, either; this was the meaning of the masons' merriment.

Esher faltered as the manager's grim face thrust up into the sunlight. Courage was not lacking to him: he picked up the thread of his narrative, brought out its point with a swagger. The tension damped the masons' spirits; they could muster no laughter. While Blake, grappling with wrath, turned to the work for relief. In his exasperation, he feared lest he lay hands on the man.

Provoked at the situation, reading denial of his power in the men's embarrassment, the builder flung prudence aside. Action, indeed, was forced upon him.

"You don't like my yarns, eh, Blake?" He affected

carelessness, winked at Simmons—to the latter's acute discomfort.

Balancing his trowel, Matt calmly met the builder's gaze.

"I think we can spare them during working hours," he answered evenly.

"And you also," he added resolutely. The words cracked like a pistol shot.

Esher crimsoned. "What d'you mean?" he snarled. "I'm boss here. I'll do as I please."

Blake set another brick.

"Then please move," he suggested. "You're in the way."

The builder choked in his passion. Finding his voice, he called the masons to witness what he had endured from Matt. To oblige Mr. Downey, he had let in his pace-maker, had allowed him to drive the men and dictate construction. But that was all done. The tile maker would have to choose between him and Blake.

"Now!" he bawled. "He's got to decide right now. I'll call him on long distance and show you where you get off."

Charging past Matt, he gained the ladder, paused to glare defiance.

"That's right, Mr. Esher." Blake's voice was full, untroubled. "Put it up to Mr. Downey. You might tell him also"—he scooped up a trowel of mortar, spared the boss a glance—"that I've warned you to keep away from this factory—for good."

From this contest with the foreman, Blake emerged an enigma. Esher's fluent rage, following his talk with Mr. Downey, had bared to the village the whole tale of his stupidity, his assumptions—the contrast of his boasting with the manager's patience and reserve. To possess power and restrain one's self was beyond Warren's understanding. Sympathy inclined to Esher: despite his folly, he had been ill-used.

Matt took hold at the plant without flourish. To reassure the men, to keep them in their stride to get results, was his first aim. Unconsciously his qualities of leadership were brought out by the problems, the emergencies presenting themselves. He was competent, keen, analytical. He was patient with good faith; remorseless on the track of pretence. He set tasks—by accomplishing them. He demanded nothing that he could not or would not perform himself. It was this devotion to the work, plus his intrepid self-confidence, which won the men little by little to allegiance and finally fused them at a stroke into an organization.

The Game of Leadership—Blake's Unconscious Master-stroke.

Matt took no thought to hurry the process. He put trust in the instinctive fairness of the men, kept them vigilantly at their jobs and dealt with each situation as it developed. In setting the machinery, he assumed the post of danger, but with no idea of sacrifice. His eye and brain were quicker, his muscles more ready for extraordinary effort should aught go amiss. From trust, begotten by this care of them, by his fearlessness, a single step would carry the gang to complete surrender.

They took it one blazing August noon. For all Matt's example, the Warren masons were reluctant to work aloft. Two of them had volunteered to run up the east gable of the dry shed, but their courage balked at the kiln stack. One helped Lane to carry it half way up before the narrow platforms daunted him. Then Matt drafted the second gable builder. The unaccustomed height reduced him to helplessness in an hour, and the manager

himself joined the Englishman. The helper who hoisted materials could serve two masons as well as one.

Blake had been wiser to release this helper, a young fellow named Bratton. Daily he grew more fearful; Lane and the manager, rallying him and encouraging him by turns, had difficulty in coaxing him up the ladder. It did not occur to either that his dread of the gulf held menace for both.

The scaffold uprights were pine timbers, each section three by five inches and eighteen feet in length. When the staging, by successive lifts, had reached the top of one set of supports, four more beams were raised and spliced to them. Matt and the helper poised them aloft; Lane spiked them into place.

Four-fifths completed, the stack was fifty-five feet in the air when Blake and Lane glimpsed death together. Of the last set of uprights, which would carry the stack to the capstone, two had been successfully raised, anchored and braced when the noon whistle sounded. A third was on its way up.

The lofty staging, the potential danger, drew the gang to watch.

Instead of scattering to their dinners, they gathered, masons, carpenters, laborers, to mark the undertaking. Fascinated, they followed the beam to the flimsy platform, saw it lifted and balanced in air, guided to its place alongside the lower support and steadied there. Shoulder to shoulder, Matt and the helper took the load—near two hundred pounds—while Lane knelt, seizing sledge and spikes.

To give his burdened mates more room, the mason leaned outside the post, clamped the new upright to the other with his brawny left arm, set the first nail.

The spike was never driven. Whatever the cause—sense of the group observing him below, over-strain of the long morning, with this frightful ordeal for climax—Bratton's nerve gave way. Blake, intent on the mason's movement, heard the helper sob, felt the sudden, sickening wrench of the beam's full weight before the other's hands vanished.

The next instant, his scalp crept as he realized that he had lost control of it; Bratton's failure had been too sudden to allow readjustment of its poise. Slowly, inexorably, the thing tilted outward, to the right. He must restore its balance, else it would fall across the bricklayer's back; hurl him down when it was loosed.

"Lane!" he called. His throat cracked; no sound came forth. For an unending agony of time, he battled, battled, with the swinging monster, fought its dreadful momentum. Was the mason blind or stricken powerless by the peril?

The contorted faces of the men below, their hanging jaws, mocked him. Giddiness swooped at him: he closed his eyes. Lane should have his chance. Perhaps he could hold on long enough—ah!

He was falling—but backward! He struggled to let go: his hands clung.

"Blake!"

Matt gasped—sucked in a strangling breath. The intolerable extra load was off arms, back, legs. He opened his eyes, wondering. Lane, the sturdy lion of a man, was on his knees, muscles of arms and fore-arms swollen and quivering as he both supported and steadied the rocking beam.

"Steady now." Matt summoned his forces at the command, set his teeth for the effort.

"Up she comes." At the mason's word, he heaved with him. The lift was a scant six inches; the timber rested

on the platform. Now it had only to be kept in balance.

Cautiously Lane shifted his left hand higher, then his right. Slowly he rose, never relaxing control of the timber. Now he was in Bratton's place. The beam was perpendicular, in perfect poise. They were safe.

As at a signal the men below went suddenly mad. They yelled, danced, beat one another, blasphemed incoherently with countenances of worship.

"Let me have it," the Englishman ordered. With a shout of warning he lifted the timber clear, balanced it, cast it out and down.

The crash stilled the cheers—so vivid the reminder of what had all but occurred. They broke out again as Lane caught at the younger man's hand and crushed it in his hairy paw. Not a man below had missed the courage, the tremendous physical strength which Blake had summoned to save the Englishman. Esher and the past were blotted out. Misunderstanding, distrust had vanished in that moment of helpless sympathy and frenzied, vain desire to help.

Matt waved to the little company. He was shaken and giddy from the ordeal, but his spirit rallied at the outburst below. These men were friends—allies—his gang—the nucleus of the organization needed to drive the business to success. Against odds he had won them. The hazards of the future he could face with steadier front.

(Continued in our next issue.)

EXPORTS AND IMPORTS.

The "Consular Trade Reporter" has the following to say in reference to developments in the clay industry:

"Clay products of the United States last year aggregated \$170,115,974 in value, an increase of \$3,794,761 over the previous year. In this line of goods there is comparatively little foreign trade. Of fire brick, for example, the output in 1910 totaled 922,209,000, valued at \$18,111,474, but the exports thereof reached only \$634,775, or less than 4 per cent. The export of all other bricks aggregated \$968,138. However, this export trade in bricks has been growing, especially since a number of factories have located on tidewater, whence shipments are made direct by vessel. The total export sales of bricks last year were \$453,021 greater than in 1909, and \$939,427 greater than in 1908.

"The most prominent recent improvement in this industry noted by the 'Geological Survey' is the brick-setting machine introduced in the West. The idea of handling brick by machinery originated in New England, and a plant was equipped several years ago with an elaborate system and was the first to use the 'unit stack.' By this system the unit for handling was 1,500 brick. This plant was destroyed by fire and was never rebuilt. In 1909 a system of handling from 600 to 1,000 bricks on a somewhat different plan was put into successful operation in the West, and is now being used in Chicago. By this system it is possible for the brick to be carried from the molding machine to the drier, from the drier to the kiln, and from the kiln to the stock yard or the delivery car or cart without being touched by hand. Each of these machines is said to do the work of 40 men.

"The pottery ware made in the United States last year had a value of \$33,784,678. Of this there was exported \$928,475 worth of earthen and stone ware, and \$113,214 of chinaware. The production in 1909 was \$31,049,441 in value, and the exports \$776,842 of earthen and stone ware, and \$86,853 of chinaware.

"The importation of undecorated chinaware in 1910 aggregated \$1,181,332, of decorated chinaware \$9,586,267, and of all other \$551,927."

BRICK IN THE LIME LIGHT

Objects to Attain by Exhibits at the Clay Show. Some Suggestions Which May Be of Use to Exhibitors

Next March burned clay products will make their first formal appearance before the American public, in a seven days' stand at Chicago's great industrial theater, the Coliseum.

Burned clay has been playing an important part in the progress of civilization since the building of the Tower of Babel, but this is the first occasion on which we have offered our products for the formal inspection of the nation in a comprehensive manner. It is therefore important to our interests that we "put our best foot forward," and produce a show that will be a credit to our great industry.

Manufacturers of brick and other clay products general-

tractive manner that the exhibit will effectively call the attention of visitors at the Exposition to the display, causing publicity in newspapers and magazines.

Fourth: To make the exhibit add to the attractiveness of the show, as a whole. As every clay manufacturer must be interested in the success of the show, each one must therefore do his share to make the show attractive and secure the best possible results.

With these points in view, and to enable those who are planning to be represented in a creditable manner at the great show next March, "Brick and Clay Record" undertook, for their benefit, to secure a variety of architectural designs suitable for exhibition structures for the display



When All Roads Lead to Chicago, March 7-11, 1912.

ly have not been exhibitors, heretofore, and many of those who will display their wares at the coming Exposition are at a loss, at this time, as to the proper manner to make an effective exhibit. It is particularly true in the case of manufacturers and dealers in building brick. There is more or less sameness in these products, and therefore difficulty in making an effective display.

There are several points to be considered in planning an exposition display, and these points might be enumerated as follows:

First: To show the quality and variety of the various types of brick manufactured in the many varieties of form, texture and coloring.

Second: To effectively display the availability and beauty of the material for actual construction work through architectural effects, thereby bringing out the true beauty and texture of the material displayed.

Third: To show the material in such a novel and at-

tractive manner that the exhibit will effectively call the attention of visitors at the Exposition to the display, causing publicity in newspapers and magazines.

The Architectural Competition.

Unusual interest was manifested by architects throughout the country in this competition, which closed on December 1st. A large number of designs were submitted, and the Committee of Awards found much difficulty in making selections. They based their decisions on the points named in the program announcing the competition, and also considered the quality and suitability of the structure for the purposes desired, that of properly displaying brick at the Clay Products Exhibition, to be held in the Coliseum, Chicago, next March.

The publishers of Brick and Clay Record were fortunate in securing as a Committee of Award the services of three men of great prominence in the building world. Mr. Hermann L. Matz of the S. S. Kimbell Brick Co., Chicago,

represented the brick interests, and Mr. Dwight Heald Perkins and Mr. Arthur F. Woltersdorf, who are among the most prominent architects in Chicago.

The work of preparing the designs for reproduction in the pages of "Brick and Clay Record" is now in progress, and these will appear in our issue of January 1st, together with the portraits of the winners of the \$175 cash prizes, and a list of those receiving favorable mention.

Suggestions to Exhibitors.

The increasing interest in the coming Clay Products Show insures the success of the enterprise, and there is no question but what the Coliseum floor will be well filled with burned clay exhibits of quality and variety. That the exhibits may produce the best possible effect, however, their construction and arrangement should be harmonious, and to this end it is suggested that exhibitors co-operate fully with the Secretary, Mr. F. L. Hopley, 815 Chamber of Commerce Building, Chicago, and express their willingness to work with him to make the show as attractive as possible. He will be very glad to help and advise exhibitors and serve their interests in every possible way. He considers himself their servant, and that he is acting entirely in their interests. This is a Clay Show and not a Machinery Show, and Mr. Hopley's one purpose is to make the result a creditable display of burned clay products.

Those who have not yet secured space at the Coliseum, should do something for this great enterprise, and receive the practical benefits from the publicity which will be given the displays and should not delay any further in applying for reservation of space.

Manufacturers of clay products may feel free to adopt any of the designs shown in the recent competition for their displays, and can work the designs out to suit themselves. If they require further help in preparing working plans and specifications, no doubt the architect who prepared the design will be glad to assist him.

No exhibitor need fear that there will not be sufficient time to prepare an elaborate display for this exhibition. The management has secured two extra days' use of the Coliseum and will provide for the exhibitors fully and assist them with their plans. The exhibitor who desires to secure brickmasons in Chicago, can obtain all the expert help that may be required in that line.

It must be remembered that the structures are all of a superficial character, and as long as the desired outward effect is secured elaborate masonry work is not required, nor need any attention be paid to permanent or load-bearing construction. Many "tricks of the trade" can be utilized in cheapening and hastening construction.

Most of the exhibitors will doubtless desire to build their structures in such a form that the interior can be used for an office or reception room for their guests. Others will simply erect structures for advertising their ware and will not undertake to maintain offices.

The publishers of "Brick and Clay Record" will be glad to have exhibitors consult with them regarding this matter, and will give all the assistance possible in preparing exhibitions.

CROWDED WITH ORDERS.

We have been informed that the new drain tile company at White Hall, Ill., is crowded with orders. The fifth kiln is now under construction and the company hopes to have the sixth kiln finished by the middle of December.

GOOD "BRICK TALK."

That enterprising firm, the Milton Pressed Brick Co., Ltd., of Milton, Ont., and Toronto, Ont., have just published an interesting little book, entitled "Milton Bricks: An Aid to Better Building," in which the following appears:

"The Great Wall of China was built of brick—with what foresight we cannot know—but we do know that time has demonstrated the wisdom of the ancients in choosing that almost indestructible material.

"To the Romans, however, is due the credit of perfecting the manufacture of brick. By them, too, it was introduced into England. The old Roman Wall which they built around London was made of brick, and stood for centuries as a lesson in solid construction to the British people.

Staple Building Material.

"This lesson is one that has endured through the history of the Anglo-Saxon race. Brick were, have been, and are, the staple building material of the nation. The use of this material in building Bentley's colossal Westminster Cathedral shows clearly that the claims of modern construction materials cannot dislodge from the mind of the Briton the faith in brick which centuries of successful building experience have inspired.

The Charm of Age.

"The world over, the human heart longs for permanence. When you plant a tree you like to think that its shade will be enjoyed by generations to come. When you gaze at the pile of brick and stone that represents an architecture of bygone years, you admire it—not for what it is, but because it has stood there for 800 years.

"Brick has proven itself the most permanent building material in the world."

THE NORTHWEST.

The North American Brick Co., at Duluth, Minn., has just finished burning a kiln of 25,000 brick, which will probably be the last burned this season.

We learn from a newspaper clipping that the Cheyenne (Wyo.) Brick & Tile Co., will soon begin to install some improvements at its plant in order to be ready for the spring rush. One of these improvements will be a tramway for the unloading of the shale at the plant.

The Douglas & Valentine Co. which recently purchased the property of the Pocatello (Ida.) Pressed Brick & Manufacturing Company at a receiver's sale, has placed a force of men at work on the big deposits of clay owned by the company. The clay will be sent East to be tested as to its adaptability for use in the different lines of manufactured products. The plant is said to be the most complete and modern in Idaho.

FINE PLANT TO BE ERECTED.

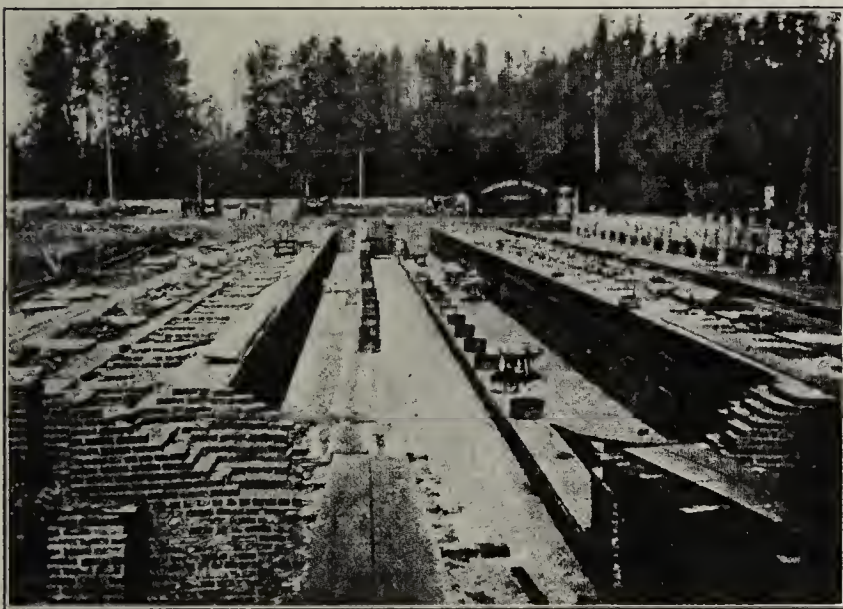
Further information as to the organization of the Keokuk (Ia.) Brick & Tile Co. previously mentioned in "Brick and Clay Record," is that officers have been elected and actual construction of the plant has begun. The officers are as follows: F. W. Swan, president; W. F. Scott, Paul T. Pechstein, secretary-treasurer. The company has announced that all the stock has been paid for or subscribed for and there is none for sale. Peter S. Heutel of St. Louis has been engaged as manager and superintendent of the plant and has already taken charge of the construction. Fifteen acres of land underlaid with clay has been purchased and a plant modern and up-to-date in every way and equipped with the latest improved brick machinery will be erected.

KILN FLUE REGULATION*

Rules of Thumb Discarded in Modern Construction of Kiln Flues—Practical Suggestions for Regulating Size and Number of Secondary Flues

By Dwight T. Farnham, Seattle, Wash.

There are numberless rules of thumb by means of which kiln builders regulate the size and number of the secondary flues in a kiln bottom. These run anywhere from the practical formula of an old mason who, while putting in a circle flue in a sewer pipe kiln was asked how he told how big to make the openings left in the top of this flue and replied that he made each one a little smaller as he went toward the stack, and if the last one was so small he couldn't see it, he went back and "chipped each one



Foundation Nearly Completed. Note Location of Main Flue.

out a bit," to the kiln burner's rule of building every flue with twice the area of all the flues that emptied into it. This last has its good points until you come to the stack which is likely to be a monstrosity. The mason had the right idea too, but both rules are rather vague and are likely to develop peculiarities when applied to certain cases.

In this discussion, the writer intends to keep strictly away from kilns whose interior draft is regulated by means of innumerable exterior dampers. This includes all sorts of kilns with multiple stacks located on the walls or on the crowns and all kilns whose main flue to the stack is divided into several parts, each one of which draws from a limited floor section, and is regulated by a separate damper. Very fine results can be obtained from such kilns, but with a clay whose vitrification range is narrow and where you are burning about six hours ahead of your settle it requires extraordinary intelligence on the part of the burners to handle the large number of dampers to the best advantage.¹

The type of kiln we are considering is designed with the idea of being automatic in its regulation; that is, once it is regulated so that it burns evenly when judiciously fired and the ware in all parts of the kiln settles evenly, it can be left alone as far as regulation is concerned. The regulation in this type of kiln is done after the kiln is burned off, and should be easily effected. The head burner can himself then make any slight change in the secondary flue openings which he deems necessary after inspecting the burned ware. On a large yard where there are a million

and a half brick burning at a time, he can more efficiently regulate the kilns at this time. Under these circumstances, efficient regulation would be a problem were it necessary to be attended to during the burn. Kiln regulation is a delicate matter and should be under the supervision of a man of high intelligence. The more the work can be concentrated the better will be the results.

The Kiln to Be Regulated.

The kiln we have under consideration is a kiln used to burn paving brick. The inside length is 148 feet, the width between flash walls 16 feet, giving a total floor area of 2,368 square feet. The details of construction necessary to an adequate understanding of the following subject matter are shown in the accompanying photographs. The main flue which extends through the center of the kiln from end to end is 36 inches wide and 36 inches to the spring of the crown which has a rise of 10 inches. This is equivalent to a rectangle 36x41 inches and has an area of 1,584 square inches. Outside the kiln wall, this main flue empties into larger flues which lead to the large stacks, 4x4 feet inside, located at either end of the kiln. Midway of the kiln and built upon its hub are two small stacks, 2x2 feet inside, at whose bases are located flues of equal size leading from the main flue. Opening into the main flue are 248 secondary flues which are merely the spaces left between the feather walls. The openings from between these walls into the main flue were originally 5 inches by 16.5 inches. On top of these feather walls are laid the floor brick—in this



Main Flue Completed, Showing Opening of the Secondary Flue.

case pavers held an inch apart by wads of clay so that each opening is 1x5 inches. There were originally 2,850 of these openings in the floor of the kiln. Nine of these kilns are being operated at the present time and a tenth is in the course of construction.

They have a holding capacity of 300,000 standard paving brick and a daily output of 11,500 brick each.

¹ A case of this sort would be as follows: If a section is "high" at 6 a. m., you fire it heavy until 9 a. m., then fire lighter until noon when that section evens up with the rest of the kiln; whereas, if you had continued to fire heavy until noon, the section would have kept on settling, would have been ahead of the rest, and you could have kept on the see-saw indefinitely.

*From Vol. XIII, Transactions of American Ceramic Society.

The writer had been making some study of the behavior of air in ducts in connection with a drier, and it seemed as if the laws so carefully worked out by the Ventilation and Blower Engineers might be employed to advantage in regulating the ducts in a kiln bottom.

It will be observed that each kiln has four stacks—a large one at each end into which the ends of the main flue empty, a small one on each side connected with the main flue by short flues at right angles to it. Each large stack is four feet square inside. Each small stack is two feet square inside. For convenience, we will consider one-half the kiln bottom at a time, drawing our line at right angles to the main flue in such a manner as to bisect the small stacks. This gives us a main flue 74 feet long having a stack four feet square at one end, and one-half of two stacks, each two feet square, or the equivalent of one stack two feet square at the other.

Apportioning the Main Flue.

It is evident that the large stack, if of the same height as the small stack, will take care of more than half of the main flue. The proportion of the main flue which should be tributary to each stack is found as follows:

The large stack diameter is 4 feet or 48 inches, which is equal in carrying capacity to a circle whose diameter is 54 inches.

The small stack diameter is 2 feet or 24 inches, which is equal in carrying capacity to a circle whose diameter is 26 inches.

Note.—Calculations of this sort are very often based on the relative areas of ducts to be compared. This is incorrect. Areas are not used in the above nor in the computations to follow. If we had used areas in the above our calculation would have been as follows:

Area large stack, 16 square feet.

Area small stack, 4 square feet.

16 divided by 4 gives a ratio of 1 to 4, which misses the truth by about fifty per cent.

Determining Number of Secondary Flue Openings.

In the half-kiln bottom which we are considering there are sixty-two openings between the feather walls shown in



Main Flue, Feather Wall in Place.

views 6 and 7 which we will call secondary flues. The opening from these flues into the main flue are shown in view 4, and there are 64 of them on each side of the main flue in the half kiln. Therefore, using our ratio as determined above we find that $5/6$, or 52, of these secondary flues are tributary to the large stack, and $1/6$, or 10 of them, are tributary to the small stacks.

Determining Sizes of the Secondary Flue Openings.

Having determined the number of openings which the large stack should take care of, it now becomes necessary to determine the size of these openings. Formula III tells us that the "Resistance varies as the extent of the rubbing surface, or the perimeter of the air-way, multiplied by its length." The main flue is the same size throughout its



Feather Walls, and Secondary Walls Between Them.

length so we may consider its perimeter constant. The length, however, varies; that is, the gases have to traverse to a greater or less degree the length of the main flue, in proportion to the opening's remoteness from, or nearness to, the stack. Gases from a furnace close to the stack pass downward through the ware, through the floor openings in the secondary flues and then through the main flue openings into the main flue, having only a small portion of the main flue to traverse before reaching the stack. If the gases are generated in a furnace fifty feet away they encounter the same resistance until they reach the main flue. Then they have to travel fifty feet further, all the while being retarded by the friction of the walls of the main flue.

It is clear that some arrangement must be made to offset this if an equal pull from each furnace and an equal burn or equal settle on the part of the ware in all parts of the kiln is to be obtained.

The method adopted by the writer was that of varying the size of the openings into the main flue, increasing their size as they became more remote from the stack.

In this way a small quantity of air under a comparatively high pressure is admitted to the main flue close to the stack where the pull (unreduced by the frictional resistance of the main duct) is greatest and a larger quantity of air at a comparatively low pressure is admitted to the flue fifty feet or so away from the stack where the pull is less. In this way, the number of cubic feet of air or gas per minute (the area times the velocity) entering the main flue through the openings throughout its length is the same, and the cubic feet of air, or gas, per minute passing downward through each portion of the kiln is the same. This tends to make an even burn more easily obtainable. Also the quantity (cubic feet per minute) of air being drawn through each grate is uniform. This is very essential when there are fifty fire-holes on each side of a kiln.

Theoretically, each opening into the main flue should be slightly larger than the previous one, increasing in proportion to its remoteness from the stack. This would be

difficult if not impractical from a constructional standpoint, however.

The Practical Application.

The illustration shows the main flue in process of construction. The feather walls have not been put in and the openings are seen as originally constructed, being the width of a brick by the thickness of six brick or 5 inches



Feather Walls Completed Ready for Floor Brick.

by 16.5 inches. When it became evident that these openings should be decreased as they approached the stack it was found easiest, from a constructional standpoint, to block off each hole by placing two or three brick across the top of the opening, cutting notches in the supporting piers to take the ends of the brick.

To exactly graduate the openings it would have been necessary to cut the brick, so inserted, a different thickness for each hole. We felt that such exactness would amount to rather expensive hairsplitting so the openings were graduated by groups, one brick being inserted in the top of, say ten openings, two brick in the next and so on. This method was found to be exact enough for all practical purposes.

Inasmuch as we have determined that the size of the openings should gradually increase as they become more remote from the stack, we have now to determine just how large each opening or group of openings shall be. It is evident that the sum of the carrying power of all the openings should equal the carrying power of the main flue.

In figuring any kiln, it is necessary to work out a table based on the size of the main flue in question.

Having determined how many holes of any size the main flue will properly take, it becomes necessary to determine how many of each size we shall have in order to graduate the holes properly as they approach the stack. In other words, we must determine what combination of holes will give us our necessary graduation and still allow the sum of the percentages to equal 100 per cent, or the carrying capacity of the main flue. This is necessarily—for constructional reasons—a more or less arbitrary selection. In this particular case the following selection was made:

It will be observed that only half the number of holes previously mentioned in the description of this kiln are left open. In order to bring the total percentage under 100 per cent. and still graduate properly, it was found necessary to block off every other opening. Theoretically, this is correct, and one of the kilns when regulated in this way gave splendid results. It was found, however, that

OPENINGS INTO PORTION OF MAIN FLUE TRIBUTARY TO LARGE STACK.

Number of openings one side of flue.	Number of openings both sides of flue.	Number of "brick out."	Percentage of openings.
2.....	4	6	10.0
3.....	6	2	4.14
4.....	8	3	8.64
5.....	10	4	15.80
6.....	12	5	24.96
6.....	12	6	30.00
Total 26	52	..	93.00

in most cases it was better to allow a little more than 100 per cent. opening to allow for stoppages occasioned by an accumulation of sand, brick dust, etc. We will not go into all that, however, or into the variations it was found necessary to make in this to meet conditions in slightly different kilns. The same principles were adapted to meet the conditions in thirty and thirty-four foot round kilns with equal success.

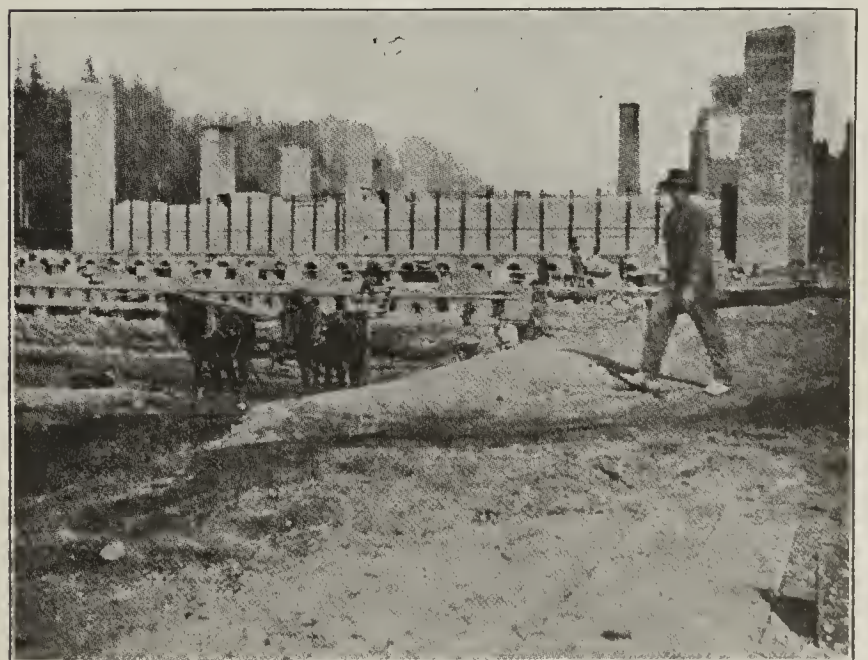
Floor Regulation.

When the flues are properly regulated there is not so much necessity of regulating the openings in the floor. The number and size of floor openings is a question much discussed, especially by the so-called "dead bottom" advocates. We assumed that properly regulated flues made the bottom regulation unnecessary. We tried, however, cutting down the number of openings by cross-setting the bottom brick in such a way as to block off about half the floor opening. In some of the kilns about half the floor openings were plugged until the actual floor opening equalled the theoretical. This was found to be very beneficial. The only difficulty is that unless a very complicated system is adopted, no allowance is made for the nearness to, or remoteness from, the stack.

If we block up half the openings we will not have enough, so, theoretically, we should block off about every fifth opening.

The Result.

This system of regulation was applied, with more or less modification to suit conditions, to twenty-one kilns



Completed Kiln—150 ft. Long—Holds 300,000 Paving Brick.

having five distinct types of bottoms. An average of the three burns made on each kiln immediately following the regulation showed an increase in first-quality pavers of 8.7 per cent. The reduction in amount of coal used is noticeable, and the burning is held more nearly to schedule. The regulation, we feel, has, on the whole, more than justified itself.

LETTERS OF APPRECIATION

We have received a score of letters from our readers expressing appreciation of our efforts in behalf of the clay industry. We regret that lack of space prohibits the publication of all of them.

J. E. Landrum, president of the Columbus Clay Mfg. Co., Black Lick, O., writes us: "We do not wish to lose sight of your valuable journal, so keep it coming our way."

Mr. Harold Copping, Oliver Springs, Tenn., tells us: "I have preserved the copies of your journal for many years, and would not miss a copy for any money."

G. O. French, superintendent and general manager, of the Big Four Clay Co., manufacturer of "Big Four Block," Canton, O., writes us as follows: "We wish to commend you for the good work that you are doing for paving brick in your very valuable magazine, 'Brick and Clay Record,' and we shall be glad at any time to give you any assistance in our power."

Otto C. Plessner of New York City, writes us: "'Brick and Clay Record' certainly is one of the most interesting trade journals I have had occasion to read, and I wish to take advantage of the opportunity to wish you continued success."

That our friends abroad appreciate our efforts in behalf of the industry, is evidenced by an excerpt from a letter written by **H. B. Hood, of John Booth & Sons, Bolton, England:** "We beg to congratulate you on your excellent publication, 'Brick and Clay Record.' We are enclosing \$2.00 for which we would be glad to receive as many copies of your issue of July 1st, with special feature, 'Death Knell of Reinforced Concrete,' as the amount will cover."

C. K. Halloway of the Oakland (Cal.) Paving Brick Co., writes us: "We are receiving copies of your publication right along, and appreciate the many good things found on its pages."

Words of appreciation from **T. B. Jones of Mountain Brick Co., Williamson, W. Va.,** are as follows: "We assure you that we very much enjoy your journal twice a month, and look forward to each coming issue with great pleasure. We wish you continued success."

Norman Moore of Los Angeles, Cal., wishing to have 'Brick and Clay Record' follow him while on a trip, wrote us, saying: "I could not do without 'Brick and Clay Record' while on my trip."

E. A. Titsworth of the Independence (Kas.) Brick Co. renewed his subscription, saying: "We have found your journal exceedingly interesting and strictly up-to-date in all points regarding the brick business."

T. J. Neiswanger, secretary-treasurer of the Harvey (Ia.) Brick & Tile Co., writes us as follows: "We enclose you herewith check to push our date ahead for another year, as we do not wish to miss a single issue. The combined publication is surely fine, and we like the twice-a-month idea, as it is not so long between treats."

A South Carolina clay manufacturer expresses his appreciation for information received in the "Superintendent's Department," as follows: "We appreciate more than we can express to you the information received in regard to the treatment to prevent brick from turning green, and for the expert investigation you have made concerning our inquiry."

The Valley Brick Co., Charlestown, W. Va., renewed subscription, saying: "We have been receiving your valuable publication for some time, and have read it with increased interest and profit during the past year."

In a letter, **J. H. Thress of the Double Star Brick Co., Christie, Cal.,** wrote us: "I cannot get along and make brick without 'Brick and Clay Record.'"

J. N. Coyner of Basic, Va., writes: "You certainly have a fine journal, and I would not think of doing without it"

W. Pope of the Georgia Brick Co., Athens, Ga., writes as follows: "We hasten to enclose money order renewing our subscription for another year. Your publication is altogether too good to be without."

E. P. Elzey, manager of United States Roofing Tile Co., Parkersburg, W. Va., says: "We are receiving 'Brick and Clay Record' and assure you it is read and enjoyed by everyone in our office."

E. F. Knight, sales manager, Bradford (Pa.) Pressed Brick Co., writes us: "We consider your publication a very important one to brick manufacturers, and would dislike to miss a single issue."

The enterprising members of the firm of the **Davenport (Ia.) Brick & Tile Co.,** are not satisfied with enjoying the journal themselves, but desire their employees to receive the benefit of the various helpful suggestions in 'Brick and Clay Record,' and accordingly continue to subscribe for five copies as has been their custom for a number of years back.

A. G. Kahn, president of the Kahn Brick Co., Selma, Ala., renewed his subscription with the following words of commendation: "We are always glad when 'Brick and Clay Record' arrives, and find much of interest in each issue. We wish you continued success."

J. W. Stipes, Champaign, Ill., writes us: "I would be entirely lost if I did not receive 'Brick and Clay Record.'"

O. S. Adams, manager Gamble & Stockton Brick & Tile Co., Jacksonville, Fla., writes us: "I have been a reader of your journal for a number of years, and feel I cannot do without it. I consider it the leading clay journal of the country today, and I wish you continued success."

J. W. Bucher, factory manager of the Heinicke Chimney Co., Newcomerstown, Ohio, writes: "I find 'Brick and Clay Record' a great help to me in my work, and do not want to be without it."

B. J. Allison & Co., manufacturers of brick, Haverstraw, N. Y., wrote us: "We certainly have been enjoying your publication, 'Brick and Clay Record,' especially so since the articles have been coming out relative to the brick industry throughout the East."

C. L. Webster of Charles City, Ia., says: "I am renewing my subscription to your splendid journal, 'Brick and Clay Record,' which I could not well do without."

TOOL HUNTING.

How much time would be saved at your plant if your men never had to hunt for tools? You probably cannot estimate the time, but the chances are that if an account was kept of this loss of time for a year, it would run up to a surprisingly large amount.

Workmen often get tools out for special purposes, then rush off to do other work and leave them to lie around to rust, and to be broken or lost. When they are needed again, a search has to be made, resulting in much annoyance, and this often happens at a critical time when minutes mean hours. A little more insisting that tools be brought back to the tool-house when done with, making it obligatory for every man who takes a tool from the supply house to sign a receipt for same, will effect a considerable saving in the course of a few months, not only in time but in the lengthening of the life of the tools, and a check is kept on careless workmen, which amply repays the time and trouble taken in keeping a record.

THE SAME OLD STORY

Collapsed Building in Indianapolis Adds Another Gory Chapter to the History of Concrete Construction

The progress of concrete building construction has been marked by a trail of blood. The number of fatalities, resulting from the collapse of buildings of this character, is appalling. Notwithstanding all this, concrete construction continues, although not to the extent that was prophesied by its sponsors a few years back. The people are learning.

The last addition to the death roll is that resulting from the collapse of a building under construction at Indianapolis. The building was a new three-story concrete structure which was being erected for the Presto Light Co. Forty-two persons were employed on the construction work. On December 6th, with little warning, the entire building collapsed, burying a score or more of the

heavy for a three-story structure.

The Indianapolis News in commenting on the accident has the following to say: "Even the casual observer of concrete construction is likely to be impressed with what seems to be carelessness in mixing the concrete. If there is even a small place in which there is not enough cement mixed with the gravel, there is a flaw which may level the entire structure, for in this kind of construction there is to a remarkable degree the application of the theory of the weakest link in a chain measuring its strength. Let us get down to the safer use of this material, both in mixing, pouring and planning, and also single out and make personal the responsibility for accidents. There is no way in which this goal will be approached so surely as to



View of the Collapsed Concrete Presto Light Building, Indianapolis, Ind., Taken Twenty Minutes After the Accident.

workers in its ruins. A half dozen of them were taken out dead and many others seriously injured.

In every case of a concrete failure, reasons are always forthcoming, but as usual the causes attributed in this case do not explain away the truth of the danger as to this form of building construction. The statement that the forms were taken away too soon is no explanation at all. The compromising fact remains that construction of this character is always so uncertain as to make it a menace and a danger.

The collapsed building was about half completed, and was still in the hands of the contractor. It is said that warning had been given the day before that some of the concrete beams had commenced to bulge and the collapse predicted, but no attention was paid to this. The building was originally intended to be two stories in height, but the plans were afterwards changed to make it three stories. This change in the plans, however, was not to blame for the failure, as the foundations were sufficiently

place the blame for the loss of the eight lives in this instance."

The "News" touched the vital point in this editorial. The chief trouble with concrete construction lies in its uncertainty. It is not a building material which can be depended upon. There can be no possibility of uniformity in its use.

CONCRETE CAN'T STAND FROST.

A large portion of the new \$500,000 insane asylum building being constructed at Brandon, Manitoba, Can., crashed to earth Nov. 25th, and several workmen were injured. The building, which was of concrete construction, failed to withstand the cold weather and the floors fell with a crash to the basement. Fortunately no one was fatally injured.

The newspapers make a "fuss" only when someone is killed. Little is said of the numerous "near" fatalities.

ANCIENT PERUVIAN ART POTTERY.

The accompanying illustration shows two specimens of pottery, believed to be 7,000 years old, recently excavated at Peru, by T. H. Myring, an English archaeologist. It is said that these graves of the ancient Chimus of art were buried in the graves of the ancient Chimus and that the entire valley was a vast treasure house of the ancient race which flourished on the Western Pacific slope about 5,000 B. C.

The larger part of the collection consists of various vases, tinted and wrought in a manner beyond the comprehension of the modern pottery maker and proved beyond a doubt that there was a civilization in South America, at that early date, of as high a type as that of ancient Egypt.

Among the hundreds of curios are vases that whistle, vases that spout water, vases representing rats, owls in the attitude of prayer, water fowl, heads of warriors and symbolic objects that appear to have been used in workshop tinted and painted in wonderful colors, which for the most part are well preserved. One interesting specimen represents a man asleep, which is said to illustrate the "sleeping sickness."

From the modeling of and drawing on this pottery,



Specimens of Ancient Pottery Recently Unearthed In Peru.

much information may be gained as to the habits, customs and amusements of these ancient people. An old legend relates that the Incas were bringing these treasures to the Spaniards to ransom their king, who had been captured. News of his death reaching them before they arrived at the coast, they decided to bury the treasures rather than hand them over to the enemy.

Hearing these old legends, Mr. Myring, who was sojourning in Peru in quest of health, studied the situation carefully and after considerable prospecting succeeded in locating the treasures which required two months' time to remove.

It is interesting to note that while little was left of the bones of the dead and the silver and copper were corroded and disintegrated, the clay pottery was practically uninjured by time and decay, except in one part of the tumulus, the pottery was found to be ruined by the action of saltpeter with which the soil was impregnated.

It is thought that this "find" represents only one-half of the treasures which, according to the legend, were divided into two parts, known as the "big fish" and the "little fish." The "little fish" is supposed to be the one discovered.

PRAISES BRICK.

The following appeared in the editorial columns of the National Builder. We are glad to note the hearty support which is being given to brick by various building journals:

"Brick is still king!"

"Late statistics inform us that more money was spent in 1910 for brick than was spent for all other building materials put together during the same year."

"A material that holds its own for from five to ten thousand years, without being discarded, is not to be despised, particularly when it is used in larger quantities today than ever before. Will steel, Portland cement, or other material, excepting stone, hold as prominent a place in the building world, after another thousand years have come and gone?"

"A brick is a simple thing, and has been known as a 'brick only,' from time immemorial—it is a good thing, and when a man is dubbed a 'brick,' we all know the expression is intended to convey the idea that he is a 'good fellow.' Now, if it had been said, the fellow was a 'clay product,' you would not have understool what was intended; it would have reminded one of the colored man, who was told to pick up 'that agricultural implement'—meaning a spade! The gentleman of African descent was bewildered and no wonder, for the term was new and unknown to him. Let us stick to the good old-fashioned 'brick.' It is a better word—more appropriate, than the new fangled 'clay-product,' and more homelike. How many men there are—good men, too—who handle brick often, and are regularly employed in the building trades, such as painters, plumbers, plasterers, carpenters and others, who cannot tell the exact size of a brick? Thousands of men who are working, and who have worked among brick and brick buildings, for years, cannot tell you the standard size of a brick offhand when asked.

EXTENSIVE ADDITION NECESSARY.

The business of Arnold-Creager Co., New London, O., has increased so rapidly that the company has been compelled to build a large addition to their already extensive works. They report that at present they have more than four times as many orders on their books as they had a year ago. Orders for ten S. S. S. soft-mud machines, as well as other orders of various types, will keep the plant running during the winter months.

WE STAND CORRECTED.

We are informed by L. S. Russell, erecting engineer for the Bibb Sewer Pipe Co., Macon, Ga., that the statement made by a correspondent in a recent issue of "Brick and Clay Record," that Mr. J. W. Sibley of Birmingham, Ala., was instrumental in locating the Southern Sewer Pipe Plant at North Birmingham, was incorrect. Mr. Russell states that he himself spent about two years testing the shale clays in the Birmingham district in order to ascertain if they were suitable for the manufacture of sewer pipe and other hollow ware. After convincing himself that the same could be used for this purpose, he personally organized the Southern Sewer Pipe Co., placing the question of a site for the plant before the Birmingham Chamber of Commerce, whereupon the present site of the Southern Sewer Pipe Co., at North Birmingham was secured. The plant was laid out by Mr. Russell and was built under his personal supervision. Mr. Russell has since last April been engaged in erecting a large sewer pipe plant at Macon, Ga., for the Bibb Sewer Pipe Co. This plant will be one of the most modern and up-to-date of the kind in the country.



New Haigh Continuous Kiln, 560 ft. Long with 42 Chambers, Under Construction at the Plant of the Sibley-Menge Brick & Coal Co., Birmingham, Ala.

FORTY-TWO CHAMBERED KILN.

The new equipment for the Sibley-Menge plant at Birmingham, Ala., includes a Haigh continuous kiln, 500 feet in length, with forty-two chambers (shown in the accompanying illustration) a new Vulcan steam shovel for quarrying the shale, electrical transmission system, dry pan and elevator system, all of the most modern type, and a new common brick kiln, with accompanying equipment, itself with a capacity of 1,000,000 common brick a month.

WHO IS TO PAY?

The worst year of fire waste since that of the San Francisco earthquake fire! That is the promise for 1911. How long will capital stay in the business of underwriting? Will it remain to carry the risk until the rapidly growing agencies of fire prevention make good their efforts in a curtailment of the frightful burnings? The Boston newspapers, following the issuance of the admirable report of the Chamber of Commerce, and the attack on the same by the speculators in shabby building construction, quoted skeptically the secretary of the National Fire Protection Association as saying that if Boston should have a fire like that of Baltimore or San Francisco, she need not expect to be rebuilt to the extent that those cities were rebuilt by insurance capital. But need such a statement necessarily be wide of the mark? It is time for these cities with undermanned fire departments, obsolete apparatus, and growing wooden districts, to take stock of their recuperative chances in the event of a conflagration; for should such a calamity occur somebody has got to pay.

The statistics of net results of fire underwriting for the years 1901 to 1910, inclusive, according to our active member, the National Board of Fire Underwriters' reports, show losses paid of \$1,301,218,715, and premiums received, fire, marine and inland, reported to the state of New York of \$2,297,952,087, or a loss to balance the account, considering the increased liability and actual expenses paid on underwriting, of 1.01 per cent. It has been estimated that over a period of fifty years the underwriting profit will not exceed 3 per cent.

Statistics compiled of the increased capital investment in business of fire underwriting as compared between the years 1870 and 1907, show capital invested in the year 1870 as compared with the capital stock of fire insurance companies in the year 1908 an increase of but \$5,501,166 and a decrease of ninety-eight in number of companies transacting business.

On January 1, 1906, the ratio of loss paying power to the amount at risk was 66 cents per \$100. On January 1, 1910, the ratio was only 58 cents per \$100, showing that the strength of the companies, taken as a whole, to meet the burden assumed by them is less than it was before the year of the San Francisco conflagration.

In this connection it might be well to consider that while it has become customary to speak of fire insurance as a tax, that the insurance companies stand back of the tax and are obliged to make good any deficit. In the San Francisco disaster alone they contributed upwards of \$70,000,000 in new capital, an amount almost equivalent to the present capital stock of all companies doing business in this country, in order to make good its contracts in that conflagration involving losses approximating \$150,000,000.

The above data clearly demonstrates that the business would be far more profitable at a less average rate to the insurance companies provided the high potentiality of loss in the insurable properties were greatly reduced.

There is no answer to the problem except fire prevention. We must stop our burning to escape bankruptcy.—From October Quarterly of National Fire Protection Assn.

ADDITION TO STAFF.

Mr. Walter B. Snow has made a recent addition to his staff of Mr. Sidney G. Koon, M. M. E., for four years editor of "International Marine Engineering," and later metallurgist for the Jones & Laughlin Steel Co.; another addition to the force, made some time since, was Mr. John S. Nicholl, B. S., lately with the New York Edison Co., and formerly acting manager for F. W. Horne, importer American Machinery, Yokohama, Japan. Both are members of the American Society of Mechanical Engineers.



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EDITORIAL COMMENT.

Financial conditions of the country continue to improve, and there seems to be a decided advancement in the volume of business transactions. While the gain is very gradual and conservative, there is every evidence that the improvement will be lasting. Reports from the East are that the condition of the national and international money market is in a much easier condition. This general condition of prosperity cannot help but affect the brick business favorably as people are coming more and more to believe in investing their money in real estate and in building office and apartment buildings which will bring in an income.

The alert brick man watches the structural steel market with a keen eye, as an increased demand for this commodity is indicative of a corresponding increase in the demand for face and common brick, fireproofing and architectural terra cotta. The East reports a larger demand for structural steel now than at this time last year, and it is said the prospects are that there will be a steadily increasing call for some time to come. The reason is assigned to the cheapness of common building material and to the ease with which money can be procured for building purposes. Clay manufacturers in the East are, therefore, looking for a brisk demand for their wares this winter.

The effect of the systematic efforts of the Greater New York Brick Co. to bring about a more general use of brick in place of concrete is beginning to be felt, not only in the East, but throughout the entire country. Labor unions are also taking an active part in restoring brick to its former place, and many builders and architects who have been entangled in the snares of the treacher-

ous concrete, are returning to their first love—Brick. Brick paving is certainly winning popularity and all conditions seem to point to a prosperity boom for brick. The Exposition to be held in Chicago, next March, will serve forcibly to bring to the attention of the entire country the important part clay products play in modern-day building. This exhibition will no doubt, be a revelation to nine citizens out of ten—for the average person is amazingly ignorant of building methods.

OUR OFFICES YOUR CHICAGO HEADQUARTERS.

"Brick and Clay Record's" offices have always been more or less generally understood to be one place in Chicago where the clay manufacturer is sure of a hearty welcome, and we want all of the members of the clay fraternity to make our offices their headquarters while in the city. Numerous clay men have called upon us during the year to our profit and entertainment, and we trust and believe to their's also.

To us, the meeting with men who are doing things in the building and manufacturing field, means a closer touch with the clay business, which enables us to better understand the difficulties to be overcome, and enables us, we believe, to produce a better journal. It freshens up our familiarity with the events in the industry which are daily transpiring, and brings us stories and accounts of progress along the line, which are invaluable to us and our readers.

We aim to render to you a real service by affording you headquarters, in the heart of busy Chicago, which are always open and at your command. We wish to emphasize this again, and cordially invite you to come to "Brick and Clay Record's" offices as soon as you arrive in Chicago. Our telephones are at your disposal, which will put you in touch with those you wish to see while in the city. Make appointments with your associates here, and make yourselves thoroughly at home with us. We will heartily appreciate this arrangement, which we believe you will find most convenient and practical. We are now located in our new quarters at 445 Plymouth Ct. Come in and see us.

CLAY EXPORTS.

The value of the manufactured exports sent out of the United States during the year now drawing to a close, will approach, if not exceed, \$1,000,000,000. During the month of September the exports of clay products were as follows; brick and tile, \$216,407, china-ware, \$6,620, earthen-ware and stone-ware, \$115,505. This shows that manufacturers of clay products are reaching out to every corner of the world where business is possible.

If you expect to sell brick, always carry a stock of them. You can't sell what you haven't got.

LOOKING FOR BARGAINS?

If you are looking for an opportunity to buy a profitable business, or to make a safe investment, you will find some satisfactory offers in our Classified Ad Department.

Should you, however, desire to sell your machinery, plant or clay lands, you can readily find a buyer, as many others have done, by inserting an ad in this inexpensive and satisfactory medium of exchange—our Classified Ad Department. The rates are \$2.00 per inch.

COMING CONVENTIONS.

National Brick Makers' Association, Chicago, Ill., March 6-9.

National Paving Brick Manufacturers' Association, Chicago, Ill., March 4th.

America Ceramic Society, Chicago, Ill., March 4-6.

Building Brick Association of America, Chicago, Ill., March 6th.

Iowa Brick & Tile Association, Ft. Dodge, Ia., Jan. 23-25.

Inter-State Mantel & Tile Dealers' Association, Cincinnati, Ohio, Feb. 12-17.

National Association Manufacturers' Clay-working Machinery, Chicago, Ill., March 7-12.

Northwestern Clay Association, Date to be announced later.

Brickmakers' Association of Arkansas—Date not set.

Washington Clayworkers' Association.—Date to be announced later.

Ontario Clayworkers' Association, Date not set.

National Builders' Supply Association—Date to be announced later.

WISCONSIN DAY AT THE CLAY SHOW.

The Wisconsin Clay Manufacturers Association is the first one of the State Associations to co-operate officially with the Clay Show Management. Prof. Samuel Weidman, secretary of the Association has advised us that they will hold their next annual meeting in Milwaukee on March 6th and 7th, 1912. The convention will adjourn at the close of the second day in order to attend the Clay Products Exposition, in Chicago, in a body on March 8th, which will be set aside as Wisconsin Day at the Show. The Association has planned a most complete and interesting program for their convention, and it is expected that it will be one of the most interesting meetings in the history of the association. It is expected that practically all of the Wisconsin clay manufacturers will take advantage of the opportunity to attend the state convention, and also the National Convention and the Clay Products Show, after the adjournment at Milwaukee. The Wisconsin Clay Manufacturers Association is composed of "live wires," who have accomplished satisfactory results in the matter of getting reductions in railway rates, and is alive to all that may lead to the advancement of the clay industry.

ANNUAL MEETING IOWA BRICK & TILE ASSOCIATION.

We have been advised by C. B. Platt, secretary of the Iowa Brick & Tile Association, that the annual meeting of this association will be held at Fort Dodge, Iowa, on January 23rd, 24th and 25th. The headquarters will be in the Waukonsa Hotel, and the meetings will be held in the Commercial Club rooms. An interesting program has been planned and a large attendance is expected. This association is arranging for a special day at the Exposition, further particulars of which will be published in the next issue of "Brick and Clay Record."

EXPERT BRICKLAYERS NEEDED.

Some years ago when the Carnegie Technical Schools were started in Pittsburgh, there were numerous persons who thought it funny to refer to "the chair of brick-laying," or to "the graduate blacksmiths." Such an attitude now would be accepted as revealing the ignorance of those assuming it.

It has been demonstrated that the world needs graduate bricklayers and needs them badly. The man who understands his job thoroughly from every angle can command wages in the direction of bricklaying that are more than attractive.

Such is the demand for these technically-trained men that the Carnegie Schools have been obliged to establish teachers' courses to equip individuals to take charge of positions as superintendents and instructors in plants.

In the equipment of the bricklaying shop of the School of Applied Industries, the same care and thoroughness appear as in the other departments. The shop is in a well-lighted room on the ground floor, especially designed for the purpose, and it is conveniently situated with reference to the handling of the large quantities of materials required. Supplies of brick, sand, lime, etc., are kept in the adjoining store room, and the following equipment is provided: Trowels, standard and pointing; hammers; broad, cold and jointing chisels; jointing tools; tri-squares; lines and line pins; plumb-bobs and rules; levels and level boards; measuring rules; hatchets; saws; dust-brushes; mortar-hoes; hoes, sieves, boards and boxes; water hose; slack-boxes; brick-hods; water-buckets; brooms, scaffoldings, centers, etc.

GENERAL INTEREST SHOWN.

The following, which appeared in a recent issue of the Chicago Journal, is indicative of the general interest which is being awakened in regard to the coming Clay Show:

"Here are some of the things of everyday use into which the soil of the earth is made, as recounted by an official of the Clay Products and Permanent Home Exposition which is to be held at the Coliseum from March 7 to March 12, 1912:

"In the home: Brick walls of the house, clay shingle and tiling roof, clay knobs for doors, statuary and medallions, fire brick in furnace and fireplace and mantel tile trimmings, porcelain sinks, bathroom fixtures and clay water filters and linoleum, which is 65 per cent clay.

"In the yard: Clay drain pipe, lawn benches made of clay, brick walks, clay flower pots.

"At play: Clay pigeons for shooting matches, marbles, porcelain balls for "carpet ball," mud pies.

"Only one unfortunate use for clay was known by the exposition official. He told of the spread of hookworm disease in Georgia caused by the eating of blue clay by natives of certain parts of the state."

NEW CERAMIC BUILDING.

Sealed proposals will be received by the Board of Trustees of the University of Illinois, at the Office of W. C. Zimmerman, supervising architect of the State of Illinois, for the erection of a ceramic and mining laboratory at Urbana, Illinois, on the University Campus. The proposals must be received before December 19th.

WANTS WHITE BRICK.

We are informed that the Southern Building Material Co., Arcade Bldg., Norfolk, Va., wants samples and prices on white pressed brick.

SUMTER BRICK WORKS.

The Sumter Brick Works is located on the Atlantic Coast Line and Southern R. R., at Sumter, S. C. The grounds comprise 63 acres, under which there are several strata of clay.

The main buildings comprise the boiler and engine rooms, which are built substantially of brick, and the machinery building and shed of frame with composition roof. The clay used is hauled to the plant in American bottom dump cars and is stored in a 40 ft. storage shed with underground conveyor. A bucket elevator is used in wet weather when the clay is damp. A Chambers disintegrator is used in preparing the clay, which is tempered with water in a 12-ft. horizontal Chambers pug mill.

The soft-mud process of manufacture is used and the goods are molded in a large size Chambers machine. A Steele cutting table is used, one man attending the two machines; 150 Standard dryer cars are used in the eight-tunnel dryer. Six tracks of the tunnel are heated by direct heat and two by exhaust heat; 36 hours are required for drying the goods, after which they are set 42 high in up-draft kilns, of which there are four.

The power is supplied by an 80-h. p. engine, one 125-h. p.

STEEL COLUMNS REPLACE CONCRETE.

Although it was not supposed to be a very severe shake, the seismic disturbance in San Francisco a few weeks ago appears to have been of sufficient magnitude to damage one of the reinforced concrete columns supporting the water tank on the roof of the Blake, Moffitt & Towne building on Mission street, near Market. The column was crushed to the extent that the tenant would not consent to its being repaired. He insisted upon the removal of the damaged part, as well as all other columns that carried the tank and the substitution of steel supports.

This building was only recently completed by the now defunct Standard Construction Co. What is known as the Kahn bar was used in the reinforcement—the same method of binding the concrete that was used in the construction of a five-story concrete building situated within a stone's throw of the Blake, Moffitt & Towne structure, and which suffered a partial failure about a year ago. In this building several of the interior columns were crushed and it was found necessary to replace them.

San Francisco has, indeed, been remarkably free from



View of the Plant of the Sumter, S. C., Brick Works, Showing Storage Sheds, Machinery Building, Dry Kilns and Water Tower.

high pressure boiler and one 60-h. p. Lombard reserve boiler. The plant is operated during practically the entire year, and the output is common and wire-cut face brick, this being the only plant south of Atlanta which makes them. They are said to be entirely different from anything in the wire-cut line on the market. The colors are dark gray, light gray, chocolate, purple and mottled, all in the natural color, producing a beautiful effect when laid with either a white or black mortar. These brick are well known by the trade name of "Dixie."

This plant was constructed from plans and specifications gotten out by the Richardson-Lovejoy Eng. Co., of Columbus, O., and was rebuilt after a fire in 1910. The officers are Irving A. Rytenberg, president and treasurer, and John P. Maurer, secretary.

The following appeared in the Sumter "Southern" in reference to the above company:

"The Sumter Brick Works has lately shipped out of Sumter the highest priced carload of brick ever manufactured in this state, the price being \$10 per thousand for a 10,000 lot, f. o. b. from Sumter. The number of brick is, of course, not so very large, but this is given to show that Sumter has some up-to-date enterprises."

John H. McKenzie, and other Augusta (Ga.) capitalists, have purchased the Rock Mart, Ga., brick plant, and it is understood will spend about \$150,000 in making it one of the largest and finest plants in the country

concrete failures, due undoubtedly to intelligent engineering and the selection of a safe and practical method of reinforcement. The fact that Kahn bars were used in the only instances of trouble that have been called to the attention of the building public has become a matter of comment and recalls to mind the collapse of the Hotel Bixby, at Long Beach, some years ago, when several workmen were killed and injured. Here, again, the Kahn system had been used.

SELLING THE GOODS.

A pile of brick attracts no particular attention from the casual passerby, but take the same brick and arrange them in a symmetrical way, showing how they will look when laid up in a wall—demonstrating the possibility of the brick from an architectural standpoint—and the passerby halts, looks and begins to think, and if he is contemplating doing anything in the building line, the chances are he will become a prospective customer.

The Clay Show is planned with this purpose alone in view, to show prospective builders the possibility of brick from the points of beauty, utility, suitability, and best of all, durability. The opportunity to display clay products to hundreds of thousands of people at one time has not hitherto been afforded. Are you going to neglect the one chance of a life time to exploit your product?

The clay manufacturer who does his level best at all times will not be apt to be hindered in the upward march.



YOUR TROUBLES ARE OUR TROUBLES.

Do you find any difficulty in making, drying, setting or burning your ware? If so we would be glad to be of assistance in helping to solve your problems—but first we must know what your troubles are. If you are a manager, foreman, burner, fireman, setter or engineer, send in your questions, which will be referred to some of the ablest clayworking experts in the country, who will give you valuable advice free. We also want you to feel free to use this department for commenting freely on any subjects of interest to clayworkers. Let us hear from you.

MORE LIGHT AND VENTILATION.

A superintendent of an Illinois clay plant answers "A Clay Worker" with the following interesting letter and incidentally takes a whack at the same nail which was "hit on the head" by one correspondent and "clinched" by "A Clayworker" in the December 1st issue.

Editor "Brick and Clay Record":—I have just finished reading, "A Clayworker's" piece of mind, the purpose of which, he says, "Is to let in a little light and ventilation" on questions dealt with in your issue of Nov. 1st, etc.

I have been in the clay business only a comparatively short time, and do not know many things, "for sure," therefore I am prompted to ask a few questions (maybe very foolish ones) to the end of gaining a little more knowledge.

One thought which struck me forcibly was, what must be the condition of workmen's health who labor in, and continually breath, air which contains such great quantities of insoluble impurities. I have worked in plants where scummed brick was the rule, but never to my knowledge have I been afflicted with "scale," which would surely form in one's respiratory organs as a result of continued breathing of such an atmosphere. I have never heard others complain, though it is possible they used a preparation similar to a boiler compound, which was powerful enough to dissolve the scales forming scum. If such be the case, might it not be possible to obtain their recipe and apply it to the scum on the brick? (The suggestion is gratis.)

Again, why are continuous kilns, "the greatest transgressors?" Does scum laden air have a special affinity for this type of kilns?

In regard to the scummed ends, is it possible that more moisture was removed from the surface exposed to the draft? Might that not have some effect in causing the scum to form there to a greater extent?

Theorists, "paper men," as some people call them, say sulphuric acid sometimes produces the effect by combining with the lime and magnesia and what not. I wonder if it is possible that the paper and well covered seggars prevented the sulphuric acid from getting in its dirty work? Are the seggars scummed? Is that the reason they are light colored?

No doubt the South Carolinian's troubles came from

green vegetables, onion tops or mangoes; it couldn't possibly have come from Vanadium compounds.

I am a great stickler for practice, but say—let's check it up with good common sense, or theory.

LIABILITY FOR INJURY TO EMPLOYEE.

In a brick-paved yard on which were located 16 kilns for burning brick, with an underground conduit extending from each of the kilns to a nearby smokestack, a separate manhole, distant about eight feet from the kiln and close to the smokestack, which was two feet in diameter, extended from the surface of the yard vertically to a depth of about seven feet and connected with each conduit leading from the kilns to the stacks. In the process of burning brick these manholes were required to be opened a part of the time, and when open were uncovered and unguarded. About this yard, workmen were required to perform duties which occasionally took them across the yard between the kilns and manholes. In going from the lower end of the yard to the office of the superintendent at the upper end, workmen or others could and naturally would go directly over the pavement between the kilns and stacks, but could go around the yard by a more circuitous route.

One day, the man who had general charge of the brick burning fell into one of the open manholes, and was injured. It was established in the case that a short time before the accident he had complained to the general superintendent of the danger to himself and other workmen from the unguarded manholes and exacted a promise from him to have them properly guarded or protected. Relying on that promise, he continued to work in the yard, and, before a reasonable time had elapsed for the fulfillment of the promise, while passing through the yard between one of the kilns and its smokestack in obedience to a call from the general superintendent to report at the office, and his attention being distracted by a heavy wind which blew off his hat, he fell into the manhole.

In affirming a judgment for damages in favor of the man, the United States Circuit Court of Appeals, Eighth Circuit, says, that, without doubt, the location in the yard at places in close proximity to where the employees were invited and expected to pass in the discharge of their common duties, of dangerous pitfalls like the manholes in question without either guarding them or protecting them constituted substantial evidence of negligence on the part of the company.

Taking up the contention that, by reason of his long familiarity with and actual knowledge of the exposed condition of the manholes he assumed the risk of continuing to work in the yard in close proximity to them, the court says that this would undoubtedly be true except for the complaint, promise to repair, and continuance in the employment in reliance upon that promise. Tested by this rule, there was, in the court's opinion, no assumption of the risk in this case for a reasonable time within which the promised repair could have been made.

Nor did the Iowa statute require the complaint of defect to be in writing. The court does not think this statute supersedes the common law which made a complaint of defect, promise of reparation, and remaining in employ-

ment in reliance upon the promise essential to secure immunity from assumption of the risk. The Iowa statute relieves an employe from the risk, incident to remaining in the employment of a master provided only he shall have given a notice in writing of a defect which caused his injury. His immunity is not made dependent upon the proof of a promise by the employer to cure the defect or reliance upon that promise. Therefore the court thinks that the statute was intended to confer a cumulative or additional right rather than to abridge an existing one. It is not believed that the legislature intended to take away this existing right, but rather to make an alternative or cumulative provision which, when available, would render the right more secure.

But, although the complaint and promise of reparation may have relieved the plaintiff from the assumption of the ordinary risk of continuing in the company's service for a reasonable time thereafter, it did not relieve him from afterwards observing ordinary care for his own safety. It was contended that he might have gone around the yard on either side on his way to the office when summoned there; that a safe way was there provided for him; that his selection of a way through the yard which took him near the dangerous manhole was a choice of a dangerous way when a safe way was provided; and that this constituted contributory negligence on his part. But the court does not think that it can declare as a matter of law that this was so. The way through the yard was not so obviously dangerous as to preclude the possibility of any one in the exercise of reasonable care in safely employing it. The question of contributory negligence was for the jury to decide.

SOFTENING OF BRICK.

A clay manufacturer writes:

My brick when exposed to the sun become soft and dull, and fail to ring properly. The clay contains a little lime, as you will see from the samples sent. Can this softening be overcome in any way? I can burn the brick more if necessary, as they will, apparently, stand much more fire than we give them.

This question is answered by "the superintendent" as follows:

The "softening" of the brick is probably due to the lime they contain, and also to the moisture in the air, and not to their exposure to the sun. The clay appears to have been ground sufficiently fine, and the lime is in extremely fine particles, so that if the finishing temperature of the kiln can be raised it is most likely that the difficulty would be overcome. The sample brick contains about 17 per cent of pores, measuring this by the increase in weight of the brick when soaked in water, rapidly wiped dry and weighed. If the temperature of firing be raised until the brick absorb only about 5 per cent of water—that is until they are fairly well vitrified—the lime trouble is almost certain to disappear. It is probable that this will alter the color of the brick, and whether the new color will be salable we cannot say. In some cases the color is improved by greater firing, and it is nearly always darkened.

DID YOU EVER HEAR OF IT?

"What's this?" asked the city editor, glaring at the reporter. "Here you have in your story, 'The wall was built of Portland cement.' After this cut out the word 'Portland.' We don't want to advertise any particular brand of cement."

"I thought it meant Portland, Me., where it's made."

"It is none of your business to think anything. You are wrong, besides. It means Portland, Oregon, and the West must pay for all its advertising in this sheet or I'll know the reason why."—Eastern Exchange.

THE OTHER MAN'S WAY.

Useful Facts Picked Up Here and There that May Make the Day's Work Easier.

Thawing a Frozen Pipe.

This is the time of year when the clay manufacturer frequently is obliged to thaw out a frozen pipe where the heat cannot be applied to the outside of the pipe. If hot water is poured into the pipe, it soon cools on the ice and accumulates in such a quantity that it is impossible to touch the ice with the hot water. A method suggested is to insert a smaller pipe into the frozen one, pouring the hot water into the smaller pipe. If the end of the smaller pipe touches the ice, the hot water will come directly in contact with it in a continual stream. This will force out the cold water and thaw the ice quickly.

Quickly Made Tool for Bending Pipe.

A pipe bender can be made by boring a few holes in a piece of oak plank and inserting heavy bolts or short pieces of pipe for pegs, about which the pipe may be bent as desired.

KEEP YOUR BUILDINGS UP.

Don't let your buildings run down. If they have become a little weather beaten and shoddy in appearance, why not spend a few dollars in fixing them up? A few nails driven into the loose boards, a little patch of siding or shingles, and a fresh coat of paint makes a world of difference—and it pays. Well kept buildings are just as essential as well made ware—and bespeak thrift, prosperity and success. If you should decide to sell your plant appearances add thousands to the selling value. A shabby plant may produce the best of goods but it is hard to make a purchaser see it in that light.

CAN YOU TELL HIM?

A superintendent of a Georgia clay plant writes, asking for advice as follows:

"We have been using ordinary river bottom clay in our up-draft and down-draft kilns. This clay is about played out, so we intend to make stiff-mud brick from shale. We have made brick from this shale before, but discontinued doing so on account of not being able to burn them successfully in our up-draft kilns. We can get good results in the down-draft. The trouble is the brick in the up-draft kilns swell and blister more especially towards the bottom and they are such poor brick they cannot be marketed. We set 4½ brick bench and 42 brick high. Can any superintendent give me a few pointers on the subject?"

A SUCCESSFUL PLAN.

The following plan was adopted at a western brick yard and was found to work successfully. The output of the plant was about from 20,000 to 30,000 brick per day of ten hours, the men being paid by the day. In order to encourage the men to work more quickly, the company adopted the plan of calling an output of 30,000 brick a day's work, and as soon as they are made the engine stops, the men are allowed to go home and are paid for a full day's work.

By adopting this plan, the management finds the work is better done, the machinery is kept in better order, and everything works more smoothly than before this plan was put into execution. Before this plan was tried, 30,000 brick was the maximum output, while 20,000 to 25,000 was the general run. Now there are few days when the output does not come up to the 30,000 mark, all the working conditions being the same, except the method of paying the men.



NATURAL BASE BRICK PAVEMENT.*

The city of Renton, Washington, is just completing the laying of about one and one-half miles of brick pavement, which is worthy of notice by reason of the fact that it is the first brick pavement laid in that part of the country without the preliminary construction of a concrete base. The con-

this the first course, consisting of under-burned brick, laid flat, is placed. The flat course is then rolled and a two-inch sand cushion laid on top of this. The second course, consisting of No. 2 pavers, laid on edge, is then placed in position and the joints filled with a grout of sand and cement.

The single course, or type "B," pavement has been used



Cuts furnished by Courtesy of the "Pacific Builder and Engineer"

Type A Brick Pavement Under Construction at Renton, Washington.

struction of the pavement is of one and two courses of brick with sand cushions. The cost of the pavement is said to be about 50 cents per square yard less than the concrete construction, and it is claimed that the wearing qualities, except

on some of the side streets in Renton and is said to be suitable on roadways with a natural firm base. In this construction, the natural ground is first rolled solid and a four to six-inch rock, or gravel base placed in position. This is



Type B Brick Pavement Being Laid at Renton, Washington; Paving Brick Furnished by Denny-Renton Clay & Coal Co.

under the very heaviest traffic conditions, are quite as good. A feature of the Renton pavement is the use of No. 2 instead of No. 1 brick throughout the construction.

In the construction of the two-course, or type "A," pavement the ground is prepared for the first course by being graded, rolled solid and a one-inch sand cushion laid. Upon

covered with a two-inch sand cushion upon which No. 2 paving brick are laid on edge.

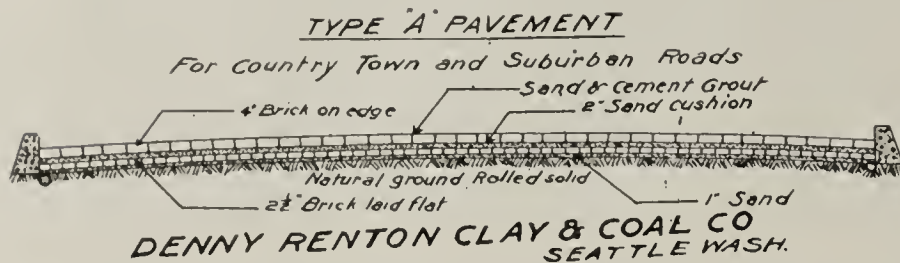
The pavement, which is being laid in Renton, covers about 29,000 square yards, and will cost in the neighborhood of \$60,000. The city officials estimate that about \$14,000 has been saved by the elimination of the concrete base. City Engineer C. O. Tvete, Mayor Joe Wood, and City Attorney

* From the "Pacific Builder and Engineer."

Paul Houser are entirely satisfied that the wearing qualities of the pavement are going to prove satisfactory, and if this is the case, localities within reasonable shipping distance of a brick plant may save considerable money by the use of this new type of paving.

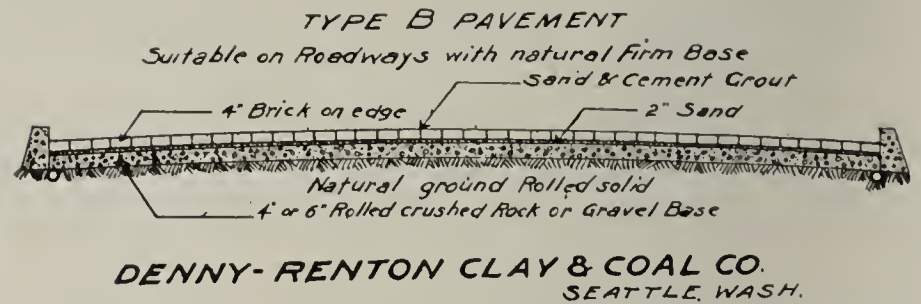
This new style of paving has also been used considerably in the East, notably in parts of Illinois, Iowa and northern

of Renton for their willingness to test out this new style of paving in the Greater Northwest. With the assistance of the Denny-Renton Clay & Coal Co., and through the activity of its Mr. Kummer, an enthusiastic advocate of the above styles of pavement, the city of Renton has succeeded in laying an eminently durable and in all respects a satisfactory pavement at a reasonable figure. Experience with brick



Ohio. In Cuyahoga county, Ohio, a large number of the suburban streets of Cleveland and roads in the more thickly settled portions of the county have been using this pavement for a number of years. A sand or macadam base has been found to be satisfactory in almost any kind of soil, with the possible exception of city streets where the heaviest kind of traffic is to be carried.

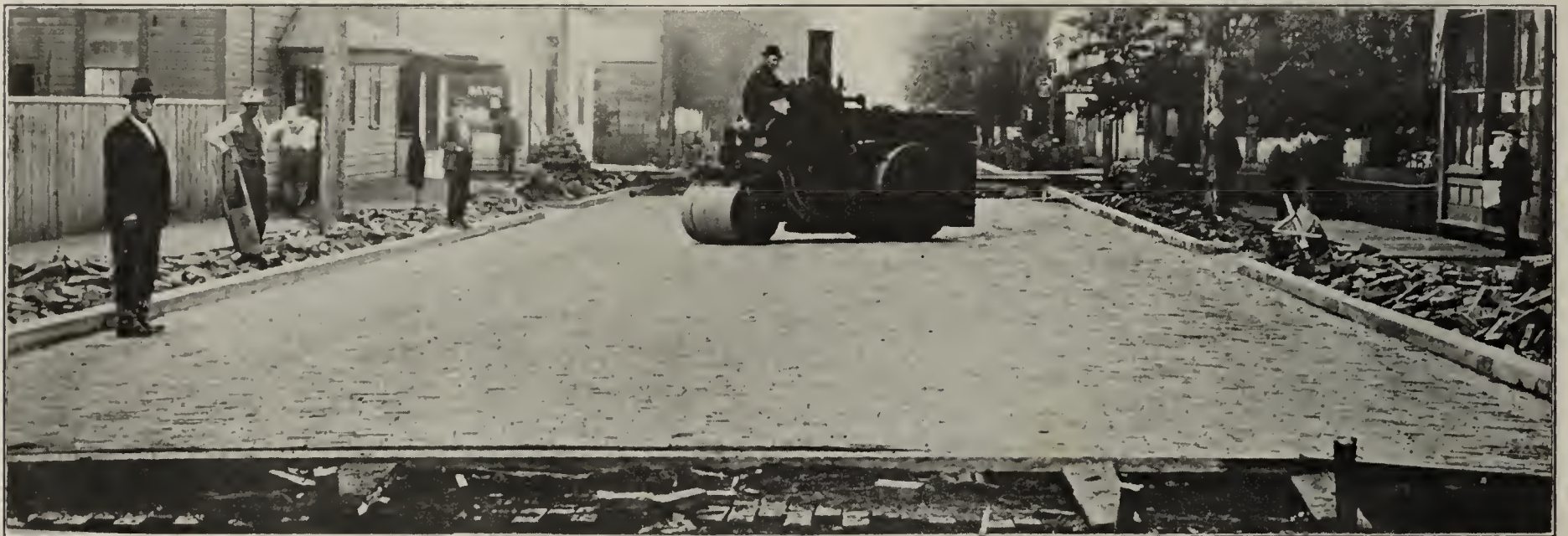
The No. 2 brick, used in both courses of the Renton pavement, instead of No. 1, and the lesser cost of this style of construction constitute the saving over the concrete construction. These brick are said to be quite as serviceable as the No. 1 brick when used with a good sand cushion, the chief difference between the two grades being the fact that the No. 2 grade has only one smooth face. In laying the pavement, the smooth face of the No. 2 brick is laid upward, and the thick sand cushion below equalizes in a satisfactory way any inequalities caused by the rough face on the lower side. The No. 2 brick are invariably as hard, and often harder than the No. 1, for the reason that their irregularities of surface are generally the result of overheating only. No.



pavements throughout the country has shown the cost of maintenance to be exceedingly low, and it is to be hoped that the example here set by one of the younger cities will be generally followed in other sections of the country.

AMERICAN ASSOCIATION OF HIGHWAY IMPROVEMENT.

The annual convention of the American Association for Highway Improvement was held at Richmond, Va., for four days beginning with Nov. 20th. President Taft was to have addressed the convention, but was prevented from being present by illness. Many leading advocates of highway improvement were present and gave interesting talks. Senator Claude E. Swanson spoke advocating national aid for the good roads movement, and explained the bill which he introduced at the last session of Congress. Walter H. Page, Editor of "Worlds Work," of New York, did not favor Federal aid, stating that he was an economist and would hesitate before asking an appropriation from the Government. General Coleman



Showing Method of Rolling Brick Pavement at Renton, Washington.

2 brick can be laid down in Seattle for \$5.00 less per thousand than No. 1.

The Renton streets where the pavement is laid are 31 feet wide, with a six-inch crown. It is estimated that 2,650,000 brick will be used in the construction of the 29,000 square yards. The time record on the job, thus far, is the laying of 116,000 brick by four men in one day. The best individual record is the laying of 30,000 brick by one man in five hours and fifty-five minutes. The contractors in charge of the work are Troutman & Young, of Seattle.

Special credit is due the council and officials of the city

DuPont of Delaware spoke for the state of Delaware, and outlined a plan for initiating road improvements and financing same. Mr. W. P. Blair, secretary of the National Paving Brick Manufacturers Association, addressed the convention on the topic of "Brick and Other Road Materials," and among other subjects discussed were: "Road Building by Convict Labor" and "The Automobile Industry—What It Has Done for Good Roads." The total registration at this convention was about eight hundred.

Mr. Charles Isleib has been engaged as the manager of the brick plant at Marlborough, Conn.



ECONOMY OF EXPENSE.

Efficient Equipment Reduces Cost of Manufacture at the Plant of the Woodland Clay Co., Woodland, Ill.

The season just passed has been, for the manufacturer of drain tile, an unusually dull one. This condition has been due to the extremely dry weather prevailing throughout the middle west; weather so dry, it is said, that the Mississippi river has been an inch lower than at any other time since 1865.



John W. Anderson, Jr., Mgr. Woodland Clay Co.

This lull in business has benefited the wide-awake manufacturer by bringing before him, more forcibly perhaps than ever before, the importance of attaining and maintaining the highest possible efficiency of equipment and organization, with a view to meeting successfully the competition which may reasonably be expected to develop, as more plants are built and the benefits of drain tile become more appreciated, creating for them a wider market.

It is with efficiency of equipment that this article will deal, and some thought will be presented as to the importance of the "little" points of excellence which go to make up the "big" differences between reliable and uncertain mechanical equipment. We are often reminded that "it is the little things that count," and we sometimes learn that, if these little things be troubles with our equipment, they not only count, but like the rabbit, they multiply very rapidly.

To get a direct view of the matter, let us take our total annual cost of operation, including overhead and all other expenses, and divide this by the number of days of operation. This will give us our average daily expense. Then go to the plant or to the plant reports and carefully determine at what minute in the day the last tile

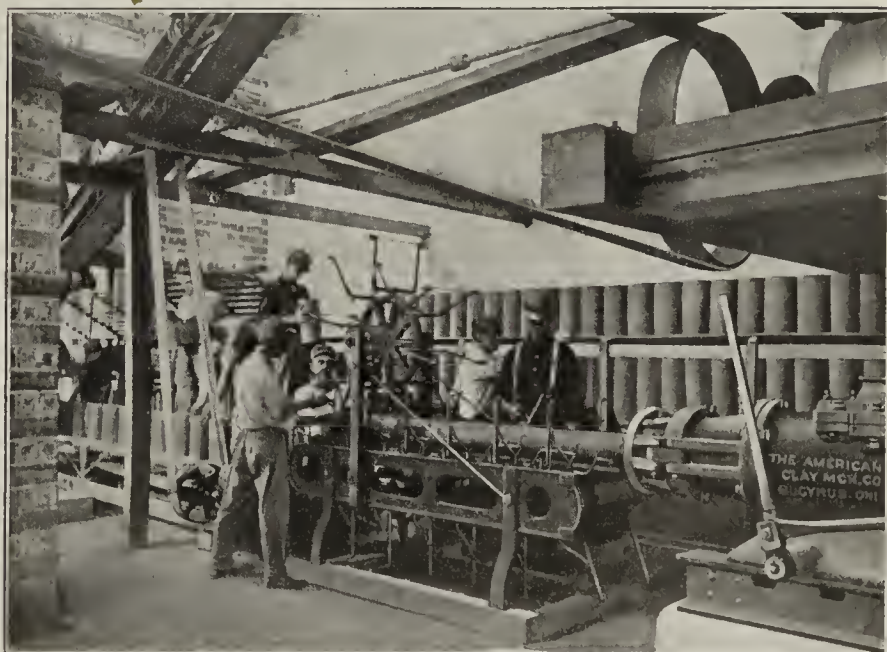
necessary to pay the day's expense is made. Also note the time when the next tile, the first in which you really have any profit, is produced. There you have the game in a nut shell. If that particular tile is made at four o'clock you are fortunate. If it is made at two o'clock you are more fortunate, but if you strip a gear or twist a shaft at eleven and don't finish the count until Thursday of the following week you are not so fortunate.

A higher grade of material and a higher factor of safety in gear or shaft would have cost you more at first, but this extra cost would have been your best investment.

The plant of the Woodland Clay Co., of Woodland, Ill., was designed and built by Jno. W. Anderson, Jr., who has for a number of years made a very careful study of the tile manufacturers' problems, and it may be of interest to learn what consideration was given by him to excellence of detail in the equipment he selected and with what results.

Being familiar with both modern and ancient engineering practice in his line, he was in position to effect the same hair-splitting economy in the selection of his equipment, as others have tried, and with his knowledge he had more chance to succeed in securing machinery that could be made to operate in spite of its shortcomings. Instead, however, he applied the usual formulas and then added liberally to every detail for "operating insurance," insurance which, by the way, cannot be had by any other method.

We find a liberal surplus of power in both boiler and engine. A liberal percentage was added to the dimensions



Auger Machine Forcing Column of Clay to Wire Cutting Machine.

of belts, pulleys, shafting, etc., and all foundations were made very heavy.

In the selection of clay preparing machinery the same idea was followed, the entire machinery equipment being the product of the American Clay Machinery Co. All steel clay cars receive the clay from the steam shovel, and a gear and friction winding drum is used for hoisting

the cars. The clay is discharged by gravity into a pug mill equipped with cut steel gears, forged steel shaft, extra heavy, and steel inserted knives of the "battle axe" type.

The clay is discharged from the pug mill into a 24-inch disintegrator equipped with heavy balance wheel on small roll shaft. From the disintegrator, the clay passes to an auger machine, the first one of the pattern. In this auger machine, as in the balance of the equipment, we find high "insurance" against breakdowns or troubles of any kind, with the "premiums" paid a long way in advance. This machine, which has since been made standard, was built with absolutely no regard for cost, and its performance has proved it capable of much greater things than anyone has heretofore dared ask of a drain tile machine.

It was designed to operate regularly at a speed of 200 revolutions per minute, but at 140 it produces 5-inch tile at a capacity of 4,000 per hour, making its normal speed of 200 impossible with present methods of handling the tile from the cutter. From the cutter the tile are transferred to a 25-foot off-bearing belt and from this belt to special triple deck dry cars. Steam is used for drying and 32-foot round down-draft kilns for burning. The



Triple Deck Car in Dryer.

kilns are lined with first-class fire brick, which is in line with the other economies mentioned above.

The buildings are not of wood or cement, but of hollow clay block made on the premises. The equipment in use in this plant possibly cost considerably more than other similarly composed equipment, but the smooth and uninterrupted service received and the unsurpassed excellence of the tile has put the matter of operation on a very safe and positive basis, and the reports on file at the office of the Woodland Clay Co. have already demonstrated that surplus strength and excellence of detail in mechanical equipment go farthest in maintaining a uniform low cost of production.

At this plant are made the "WYCO" drain tile, the superior finish and quality of which have made them the subject of so much favorable comment during the past season among dealers and users in Illinois and adjoining states.

The American Clay Machinery Co. is naturally gratified with the record made at the Woodland plant, because it has always advocated the consideration of quality first in any equipment. The Woodland Clay Co. are equally proud of the equipment, as is evidenced by the following letter written by the management of the company.

"Our clay, as taken from the bank, usually requires no tempering, and is delivered by gravity from the pug mill to a 24-inch American disintegrator, used to break up an occasional flint stone into pieces small enough to pass through the die readily. The disintegrator discharges by gravity into the auger machine. This machine is the most positive in its action and has the greatest capacity of any drain tile machine we have knowledge of. Its gears are of cut steel and are so effectively housed that after months of operation we find them as clean as when first installed. The bearings are of the improved American type, brass, wick oiling, self aligning and are giving excellent service. In fact, there has not been one hot or even warm bearing on the machine since started. The end thrust is oiled by gravity and drains into a reservoir in which the master gear runs, providing a constant supply of oil on both gear and pinion.

"The force feed device is driven by cut steel gears, also enclosed in the main gear housing. This device is simple in construction, and the application of original ideas has made it most positive in its actions. Clay too soft to stand in a four-inch column, or operate the cutter, is taken in as readily as a disintegrator would do it.

"The design of the barrel of the machine and of the augers has reduced the internal resistance of the machine to a minimum. We did not fully appreciate the extent of this improvement until we determined, by a series of careful tests, that when operating at a capacity of three or four thousand five-inch tile per hour, the average power required to drive the auger machine is 20 h. p. We have never seen this equaled, and in a few instances have seen the type of drain tile machines, considered leaders two years ago, consume as high as 75 h. p. operating at much smaller capacity."

BIG RUN OF TILE.

We notice in an Illinois newspaper that Mr. W. M. Pratt who operates the Mendota (Ill.) tile factory, states that the business this season has been the best he ever experienced, the demand for the Mendota tile having been exceptionally good.

BUSINESS PICKING UP.

The Sprang Clay Products Co., Sheldon, Ind., has purchased the new traction ditch machine, and is prepared to do trenching for sewers at 3½ to 10 inches. They are having good trade in tile and report business is picking up.

The following statement appeared in an Ohio newspaper: "The Fort Recovery (O.) Tile Co. is shipping and selling to local trade an unusual large lot of drain tile. Heavy shipments were made this week to New Weston and Rossburg. The contract for furnishing tile for the White and Ulmer joint county ditch was secured by Mr. Gillig a few days ago. This contract calls for large sizes."

SMALL TILE.

The sizes of tile used in Scotland would be a surprise to many. A writer states that forty years ago the smallest tile used for laterals in Scotland was two inches, and that the smallest tile used there now is two and one-half inches.

OPPOSE CONCRETE SCHOOL BUILDING.

Various brickmakers of New York City met with Gov. Dix to protest against the use of concrete for the building of the new \$165,000 school for girls at Hudson. The brickmakers state that they believe brick to be 15 per cent cheaper than concrete, besides having much greater fire resisting powers. The brickmakers hope to repeat the victory over concrete, which they recently gained in New York.

ANNUAL REPORT OF HARBISON-WALKER CO.

The annual report of the Harbison-Walker Refractories Co., has been completed and the same has been mailed to all stockholders. Although the annual meeting of the company will not be held in the general offices until January 15, 1912, the policy of the company has always been to mail the annual financial statement to stockholders of record many weeks previous to that time.

After a deduction of \$281,104 has been made for all ordinary repairs and maintenance, which also includes depreciation of plants, the earnings for the fiscal year show the remarkable total of \$1,686,335.

After charging off full depreciation, the profits of the year available for interest on bonds and dividends on stocks totalled \$1,443,200.71.

The company has purchased and cancelled as per sinking fund requirements \$1,585,000 bonds since its organization, and it has further cancelled in anticipation of sinking fund requirements \$650,000, leaving total bonds now outstanding of \$1,265,000, out of the original bond issue of \$3,500,000.

There was expended for improvements during the past year, increasing the capacity and efficiency of the works, the sum of \$116,326, and in addition to the charges for depreciation of plants there was charged off \$90,006 for depreciation of mining and tram outfits and \$36,802 for depletion of clay, coal and ganister properties.

The profits, after paying the regular 6 per cent on the preferred stock, were equal to 4.33 per cent on the common stock. The latter received 2 per cent in dividends for the year, leaving the sum of \$430,201 to be carried to surplus.

The following compares earnings for the years 1910 and 1911:

	1911.	1910.
Earnings	\$ 1,686,335	\$ 2,073,341
Less improvements and depreciation....	243,134	205,595
Net profits	\$ 1,443,201	\$ 1,867,746
Bond interest	77,000	88,875
Balance for dividends.....	\$ 1,366,201	\$ 1,778,871
Preferred dividends	576,000	576,000
	\$ 789,201	\$ 1,202,871
Common dividends	360,000	270,000
Surplus for year	\$ 430,201	\$ 932,871
Total surplus	5,215,060	4,784,860
The condensed balance sheet as of September 30 compares as follows:		
Assets—	1911.	1910.
Property account	\$28,635,163	\$28,599,397
Betterments completed	1,284,223	1,147,700
Betterments uncompleted	400,642	497,551
Deferred charges	295,877	298,608
Current Assets—		
Inventories at cost	1,699,778	1,590,759
Accounts receivable	1,257,210	1,407,082
Bills receivable	20,412	24,105
Cash	689,074	565,437
Investment securities	580,425	594,399
Total assets	\$34,862,804	\$34,725,039

DEVELOPMENT OF FIRECLAY INDUSTRY.

In an editorial the "Wisconsin Engineer" reviews the fireclay situation as follows:

"The attention of students, and more particularly of mechanical and chemical engineers, is directed to the somewhat peculiar changes which this decade is making in the quality and composition of firebrick. The nineteenth century witnessed the development of the fireclay industry from an insignificant beginning to the stage when several million brick were produced daily in the United States alone. The refractory clays of Kentucky, New Jersey, Pennsylvania, Ohio, Missouri, and Colorado were

eagerly exploited, and considerable fortunes were amassed during the great boom in the metallurgical industry in the last two decades of the century.

"At the present time, it looks as if the fireclay business might become of secondary importance to the engineer. Its rivals, the silica and basic brick industries, are growing apace and every year we see the realization of the qualities of the so-called rarer refractories of alumina, magnesia and carbon-silicon. The new refractories plant of the American Refractories Co. at Joliet concerns itself only with the production of silica, magnesia, and chrome brick. The new and important by-product, the coke industry uses silica brick almost entirely.

"In Germany the great Koppers' ovens were built of quartzite brick, a mixture of fireclay and quartz, but the quality of the American silica brick is so undoubtedly superior that in future installations this material will be used, almost entirely.

"Similar conditions are obtaining in the metallurgical industry. The effect on the fireclay brickmakers has been stimulating. The Harbison Walker Co., which manufactures every kind of refractory, is advertising the merits of its Alusil brick, a fireclay with special additions of alumina, which increases the refractoriness. The Laclede Christy Co. claim to have produced a satisfactory bauxite brick, which has none of the physical defects of weakness and shrinkage at high temperatures of the ordinary bauxite brick. The magnesia brick are being improved in quality to such an extent that the copper and iron smelter no longer complains of their spalling and physical weakness.

"In the range of the rarer, or high temperature resisting refractories, the products of the Norton Co., and the Carborundum Co. are especially interesting. We draw the attention of our readers to the collection of crucibles and the quick filtering cones, made of the Norton alumina, which are now on exhibit in the laboratories of the Chemical Engineering Department.

"These present developments in the firebrick industry seem radical to the student, and, in comparison to the former progress, they are striking. Yet the history of the brick and ceramic industry has been interesting in all its stages. We need not make any further excuse, then, for publishing in our next issue a short account of the growth of this wonderful industry from the time of the ancient brick makers, through the period of the potters' activities to the present developments."

FIRE CLAY NEWS.

The fire brick for the new Haigh continuous kiln, the erection of which has just been completed for the Sibley-Menge Brick & Coal Co., were supplied by the Louisville Fire Brick Co., of which Solon E. Jacobs is local agent, and the Bessemer Fire Brick Co., and the local factory of the Harbison-Walker Refractories Co.

FIRE BRICK THE BEST.

After several years' experience with other equipment, the Pennsylvania Railroad has returned to the use of fire brick for the arches on the fire boxes and about the flues. The fire brick protect the pipe and fire box from the excessive heat, and since they returned to this equipment, the engines have already shown a great saving, both in fuel and in flues.

The Fulcher Brick Co., at Nashville, Tenn., are adding several buildings, including a new brick and boiler house. The business of this firm has grown to such an extent that the present facilities are not sufficient.



SAND-LIME TESTING DEPARTMENT.

Parties who contemplate taking up the manufacture of sand-lime brick almost invariably investigate the merits of their materials in advance, so as to determine whether or not they can be successfully and economically made into this kind of brick. When subjected to a practical test, some apparently excellent materials prove utterly worthless, while others superficially less promising, produce exceptionally good brick. In order to make these tests accurately and satisfactorily, the American Clay Machinery Co., Willoughby, Ohio, has equipped its sand-lime testing laboratory with a complete line of machinery and appliances of the most approved design, and the tests are made under the personal supervision of experts who conduct them impartially and in the most thorough manner possible.

The materials to be tested are received in bags, barrels or boxes. Promptly upon their arrival they are carefully inspected, and each variety of sand given a progressive number corresponding with a like number in the test records. A small sample of each variety submitted is then subjected to a screening test to determine how fine it is and what additional pulverizing will be desired. Samples of each kind are also kept in small glass jars properly labeled for future reference. Chemical tests are also made of materials when found advisable.

The sand is then turned over to the testing department, together with a written order giving the name and address of parties for whom the test is to be made, the progressive number to be stamped on the samples, the number of brick of each kind to be made up and the proportions of sand, lime and coloring matter to be used. The written order also contains instructions as to the grinding of the sand, hydration of the lime, and moistening of the mixture. In fine, the complete details of the test are made up and given to the tester at the same time he receives the sand.

The sand and lime may be prepared for pressing into brick in accordance with several different systems. In one of these systems, the quick lime after being pulverized and hydrated is mixed in proper proportions with the dry sand in the experimental tube mill. Moisture is then added, and the mixture is ready to press into brick. Sometimes it is found advisable to divide the sand, a part of it being mixed and ground with the total required amount of lime, while the remaining portion is later added in its natural condition. This is known as the division method, and is a very reliable process. In another system, the quick lime is first pulverized, and then mixed in proper proportions with the sand, after which moisture is added, and the mixture placed in storage bins where it is allowed to stand for a period of about twenty-four hours until complete hydration of the lime has taken place. The mixture is then ready for pressing into brick.

In still another system, the quick lime after being pulverized and hydrated is mixed in proper proportions with the sand in a wet pan specially arranged for experimental

work. By the use of this machine very satisfactory samples are obtained.

After the sand and lime have been properly prepared, and the necessary moisture added, the mixture is taken to the pressing department to be pressed into brick. For this purpose the full size Model "C" or rotary press is used, so that samples will be in all respects equal to the regular product of a sand-lime brick plant. In special cases, however, the No. 8 hand press, or the No. 605 hand lever press is utilized. After the brick are pressed the number is stamped on each one, in order that its identity cannot be mistaken later. The green brick are then conveyed to the experimental hardening cylinder in which they are subjected to steam pressure for periods ranging from ten to fifteen hours. The brick are then removed, carefully inspected, and selections sent to the parties for whom the tests are being conducted.

The laboratory is also provided with a massive hydraulic press, in which the crushing strength of the samples can be accurately determined. For the preparation of sandstone, rocks, and other coarse material, an experimental ball mill, a jaw crusher and a fine grinder, have been installed, so that materials of every description can readily be tested

HYDRATED LIME.

An oft-discussed question in sand-lime circles is whether hydrated lime will keep better than ground quick lime. Mr. S. E. Young, of the Department of Commerce and Labor, Bureau of Standards, prepared a paper on the subject, which was read before the National Lime Manufacturers' Association, an extract of which follows:

"The samples of lime and hydrate were selected fresh at the kilns and hydrate mills, shipped to the plant by freight, sampled, and these samples sealed air-tight until the carbon dioxide could be determined. The lime was shipped in practically air-tight packages, and kept very well, as shown by the fact that in only three samples is the carbon dioxide over one-half per cent.

"The conditions at the kiln would seem to indicate that the high percentage in lime is due to under-burning. It was attempted to make the shipping packages air-tight in the case of only two of the hydrates, and this is clearly indicated by their low percentage of carbon dioxide. All other samples were shipped in the ordinary commercial packages.

"The results shown, obviously form the basis of the statement that hydrated lime does not keep. In order to verify this point a laboratory experiment has been conducted by myself and others. A sample of lime was divided into two parts; one part was hydrated, dried, and ground to the same fineness as the original lime. The two samples, lime and hydrate, were then exposed to the air, under the same conditions.

"After thorough mixing, samples were taken each day in which the carbon dioxide was determined by means of an alkalimeter. The results were ample proof of the above statement, that hydrated lime does not keep any better than ground quick lime."

PROSPEROUS SEASON IN SOUTH.

J. C. Steele & Sons, manufacturers of brick-making machinery, Statesville, North Carolina, advise us that the brick business has been exceptionally good in the South, this year, and that they are still filling orders for machinery, though ordinarily this is an off season.

They have recently made shipment of a granulator, elevator and drying system, to Elizabethtown, N. C.; a 40,000 capacity outfit to Greenville, Ala.; equipment for making tile to Franklin, Va.; an automatic side-cutting table to Norton, Va.; a 40,000 capacity outfit to Athens, Ga., this being the second outfit of that size they have shipped to that point this year; a 25,000 capacity outfit to San Benito, Texas; a drying system to New Berne, N. C., and an order consisting of a disintegrator, hoisting drum and clay cars to Tuskegee, Alabama.

A SPECIAL CUTTING TABLE.

The Ludowici-Celadon Co., New Lexington, Ohio, have recently installed a new automatic table for cutting floor and promenade tile and straight roofing tile. This table was made especially for this purpose by the J. D. Fate Co., Plymouth, Ohio, and cuts in multiples of $3 \frac{5}{15}$ in. so that counting the shrinkage in drying and burning, it will cut small floor tile when burned about three inches square and from one-half to three-fourths inches thick.



Fate Automatic Cutting Table.

This table is built along the same lines as the other Fate automatic tables, of which a large number have been built for cutting interlocking tile, roofing tile, Spanish tile, etc., and is very sensitive as such a table must be in order to cut a thin column of clay three-fourths inches thick, three inches wide, and still have this column govern the table.

The Fate Co. have built a great many of these tables for the Ludowici-Celadon Co. within the past two years, and are now working on an order for a similar table for the Canton Roofing Tile Co., of East Sparta, Ohio. The Fate Company is generally credited as being the largest manufacturers of automatic cutting tables, making them for cutting drain tile, brick (both side and end cut, hollow and solid), flue linings, chimney blocks, and all kinds of fireproofing, including blocks fourteen inches square.

THEY PLEASE THE EYE.

In probably no other class of modern buildings is there so much attention paid to pleasing the eye as in hotel structures. The builders of a \$1,000,000 hostelry, realize that the success of their venture depends quite as much

on pleasing the public eye as in satisfying the public appetite or sheltering the public head.

It is interesting to note, therefore, that with due regard to the matter of appearances, two of the largest hotels, one the Statler Hotel in Cleveland, a two-and-a-quarter million dollar hotel, now under construction, and the famous Blackstone in Chicago, completed not long ago, have pinned their faith to "Ricketson's Mortar Colors." These buildings represent the most up-to-date development in hotel structures and in both of them Ricketson colors were specified throughout. Hotel architects have long ago learned that it pays to buy the "best" colors.

PREPARATION OF CLAYS AND SHALES.

By I. M. Justice, Dayton, Ohio.

How to obtain the most economical and satisfactory results in the preparation of shales and clays which require dry grinding is a subject that commands the attention of all owners and managers of clay-working plants, everywhere, as well as all companies engaged in the manufacture and sale of grinding and screening equipment.

When the writer, several years ago, introduced the piano-wire screen to the general trade it was not believed that a screen 24 inches wide and 42 inches long would screen the product of one 9-ft. dry pan, but it did and since then this type of screen has almost completely revolutionized the method of screening clay. While this type of screen has not met with complete or universal success, in every instance, still it has, I believe, more nearly filled every requirement in screening clay than any other screen. In many cases where this screen was said to be a failure the cause was more the lack of knowledge on the part of the operator than the fundamental principle upon which the screen was constructed. The piano-wire screen is today a standard article of equipment and is bought and sold without fear of failure on the part of either buyer or seller.

What we now wish to bring to the notice of clay-workers generally is how to increase the daily grinding capacity of the dry pan. It is our conviction that this can be accomplished by using screen plates in the pan, having larger mesh or openings in them than is the common or usual practice now or in the past. By increasing the size of the mesh a larger volume of material will pass through in a given time and a larger elevator will be required to deliver the material to the screen. Under this condition it is evident that a larger screen will become a necessity.

Each revolution of the pan will grind, sufficiently fine, just as much under the new conditions as it did under the old; but the new condition will remove immediately from the pan all the fine and the large elevator and screen will separate all the fine from the coarse and thus save the pan from handling over and over again fine material which cannot escape by reason of fine mesh plates. This method will slightly increase the power required for the elevator but we are sure it will save more than an equal amount on the pan and the result, on the whole, will be a larger volume of finished material delivered to the machine or press for molding into ware.

In part, this idea of coarse screen plates, extra large elevator and large screen is theoretical but it has been demonstrated to a sufficient extent to make it worthy of the deepest consideration by the practical man in charge of a plant, as the object is to increase the output of the factory without materially increasing the investment.

ROOF TALK.

The United States Tile Co., of Parkersburg, W. Va., recently issued a series of thirty "roof talks" in a local newspaper. These talks appeared one a day for thirty days, after which they were published in booklet form for distribution to the trade.

These "talks" were so effective and brought such good results that we take pleasure in publishing one, entitled, "What a Roof Should Be," believing that our readers may gain some valuable suggestions in preparing "copy" for local advertising:

"Your roof, first of all, should be leak-proof and moisture-proof. Keep the walls and interior dry. "Dry" is the factor that establishes the durability, stability and life of your building; more—"dry" is the first aid to sanitation—health.

"Your roof should be fire-proof, absolutely fire-proof. A fire-proof roof returns a dividend every year in decreased insurance rates; besides, you will feel more comfortable when the 'fire traps' of 'the fellow who thought more of his dollars than of his building' are burning around you.

"Your roof should add to the appearance of your building—add tone, zest, finish, character and completeness. The proper roof, aside from fulfilling its original mission, should emphasize every feature of the structure—bring out the lines of perspective and give a harmonious setting to the whole. Many buildings are depreciated in value simply by reason of the incongruity of their roof, when the cost would have been no more to have used the proper setting—the 'touch' that harmonized.

"Your roof should be of materials that have the greatest resisting qualities.

"It should be unaffected by heat, cold, frost, ice, snow, hail and moisture.

"It should be unharmed by climatic conditions or atmospheric changes.

"It should be non-porous and a non-conductor.

"Non-porous, that it will not take up moisture and "sweat" on the underside, creating dampness and decay.

"Non-conductor, that it may not transmit the heat of summer or the chill of winter to the interior. The attic should be as cool in summer as the reception hall, and this is possible.

"Your roof should possess all the qualities of utility, stability and durability, with the added graces of attractiveness, harmony and symmetry, without fault or defect—satisfactory from every standpoint—real merit—real money's worth.

"Investigation will prove that all these essentials are to be found at a fair cost in U. S. Shingle Tiles."

FINE CLAY BEDS DISCOVERED.

An eastern newspaper states that, in digging for the septic beds of the new sewer pipe plant at Point of Rocks, near West Chester, Pa., the workmen struck a bed of exceptionally fine brick clay which is free from sand and gravel and found under about one foot of soil. It is thought probable that this clay will be used for brick-making, which industry has been somewhat on the decline in West Chester for several years, as it was believed that most of the clay beds had been exhausted, only one brickmaking establishment being in operation there at present. As there are many brick shipped into West Chester each year, this looks like an opportunity for a progressive company to establish a manufacturing plant.

NOVEL CHINESE CONSTRUCTION METHODS.

"Clay and kao-liang is the material used for building in that part of China in which Tientsin is located," says Consul-General Samuel S. Knabenshue. Kao-liang is a plant similar to American broom corn, which grows to a height of 10 to 12 feet. The latticed stalks are erected to form a framework for the side and end walls and roof, and then clay is plastered thickly both inside and out and smoothed down. The Chinese house is invariably of one story, but the houses of the better class are built of brick with tile roofs. Corrugated iron, as a roofing and building material, has a good sale. There is only one composite roofing material on the market and one of the largest importing firms of Tientsin is advertising it extensively.

A PROSPEROUS TILE COMPANY.

The Trent Tile Co., of Trenton, New Jersey, are contemplating opening up an office in London next year to take care of the foreign business of this concern which has become so large that an office abroad has become a necessity. Thomas Hulme, a prominent Londoner, will be the London representative of this company, which is furnishing all of the tile for the McAlpine Hotel, now in the course of construction in New York. This contract calls for 2,000,000 pounds of tile, which will be shipped from the local plant.

NOVEL METHODS USED.

We should hardly expect to learn much of the arts of civilized life from the tribes of central Asia, yet it seems that they make better brick than we turn out. The barbarians employ the same material that we do, and, curiously enough, the thing that imparts superiority to their process of brickmaking is one of the powerful agents of Western civilization—steam. When the Asiatics have baked their brick for three days, the opening of the oven is closed with felt, which is kept wet, so that the brick intensely heated, are enveloped in steam. The process causes a remarkable change in the character of the brick. From red they turn gray, and at the same time acquire a remarkable degree of toughness and hardness. Although porous, they give out a sound when struck like that of clinkstone, and they are said to resist the efforts of weather much better than do the brick of Western make. Necessity was the mother of invention in this case, for the climate in which these ingenious Mongols live is subject to great extremes of temperature, producing a disastrous effect upon brick made by the ordinary process.

TWENTY-FIVE HANDSOME RESIDENCES.

A row of twenty-five houses has been built on Colonial avenue, Trenton N. J., by Major Harry C. Valentine, and the thoroughfare presents a most attractive appearance.

The houses are of brick construction, the face brick being buff color, supplied by the Hydraulic Pressed Brick Co. The windows have terra cotta trim, and the roofs are of red Spanish tile. The walls are 13 inches in thickness.

The row starts at 150 feet from State street and runs the entire length of the avenue to the Water Power. The houses at each end of the row are larger than the others and contain 13 rooms, the remainder having 10 rooms each. They are set up on a terrace and present a very massive effect. They are all three stories in height and each occupies a lot 16x100 feet in size with a driveway along the rear. Major Valentine's main idea was to build sanitary houses and it would appear that he has accomplished his object.

NEW SHOPS IN EVANSVILLE.

The accompanying illustration shows the extensive plant which the Bucyrus Co., of Milwaukee, Wis., which has combined with the Vulcan Steam Shovel Co. of Toledo, Ohio, has just completed at Evansville, Ind., which will be operated by the company in addition to its plant at South Milwaukee. The Vulcan Co. will move its belongings from Toledo to the new plant at Evansville, the site of which is comprised of seventy acres, and it is expected that the new shops will employ 1,000 men. The company has made large purchases of materials and patterns for the manufacture of wire rope shovels which will be built at Evansville as well as chain shovels. The company proposes to manufacture dredges of all sizes and types, pile drivers, steam shovels of the heavier type, for which it has a world-wide reputation, and also to bring out a full line of light revolving shovels weighing up to forty



New Home of the Vulcan Steam Shovel Recently Erected at Evansville, Ind.

tons. It will also manufacture several types of earth-handling and other excavating machinery such as are used about clay plants.

AN OPEN LETTER.

The following letter has been received from the well-known firm of C. & A. Potts & Co., of Indianapolis, with request for publication:

Publishers "Brick and Clay Record:" We are in receipt of a letter from a prospective customer at Detroit, stating that some unscrupulous competitor has reported in that city, that we are going out of the business of manufacturing brickmaking machinery and appliances. We wish to deny this most emphatically, and to say that we expect to be manufacturing this class of machinery when such competitors are long in the bone yard. They surely must be in a bad way for business when it becomes necessary to use such methods to obtain it.

"We have at all times gotten a fair share of the sand mould business (we don't expect to get it all), and by the same means used here-to-fore "fair and honest treatment of our customers, and giving full value for money received." There is no reason for our quitting.

The outlook for the coming year is bright, and we wish to notify the trade in general, that we will be in position to furnish Potts machinery and supplies promptly as here-to-fore.

Yours truly,

C. & A. Potts & Co.

MILLION DOLLAR PAY ROLL.

It is said that in Seattle, Wash., a spirit of enthusiasm and optimism permeates the offices of the Denny-Renton Clay Co. The manager of the company had the following to say in an interview, which was published in a Seattle newspaper:

"We're not an old organization, for we were born in 1905. Old-timers will remember our parents—the Denny Clay Co. and the Renton Clay Works.

"We make many different kinds of wares—paving brick for streets; vitrified pipe for sewers; brick for buildings and mantels; partition tile and flue lining for interior construction; and terra cotta for the ornamentation of homes, omces and public halls. We manufacture conduit in which to carry electric cables; we manufacture drain tile for farms, and fire brick for furnaces. And here's the most important point—we are making and have always made only the best prod-

ucts producable, which, in all cases, redound to the credit of our city.

"In the course of the manufacture of these products we require the services of over 900 men. We pay our men almost one million dollars annually. Our paving brick plant is the largest single unit plant in the world. Its development has required much thought and the expenditure of large sums of money. We are all the time trying to improve—here a little and there a little, on this plant, as well as our other plants.

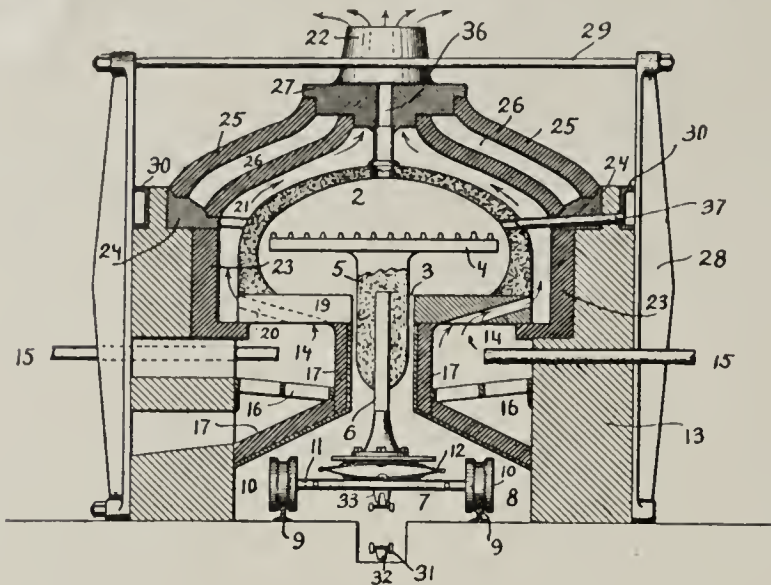
"We have three sewer pipe factories, all manufacturing the best quality of vitrified salt-glazed sewer pipe, and through them we are supplying the markets of Washington, Oregon and British Columbia. In addition to the foregoing plants, we operate a terra cotta factory, whose product ornaments some of the handsomest buildings in Seattle and many other cities on the Pacific Coast.

"We are making over 58,000,000 paving brick a year, and over 1,500 miles of sewer pipe. These are large figures, but they are true figures. At Renton, Wash., there is being completed one and one-half miles of paving.

"Prominent among the newer modern Seattle buildings constructed with materials from our plant in recent years are the Perry Apartments, Boren and Madison; the Crary Building, Fifth avenue and Union street; the Auditorium, Engineering and Chemistry buildings, University of Washington, the Hoge Building (brick), Second avenue and Cherry street; St. James' Cathedral, City Hall, Frye Hotel, new Franklin High School (brick and terra cotta), and Queen Anne High School."

RECENT INVENTIONS

985,797—Kiln. Frederick Ernst Goldsmith, Middletown, Ohio, assignor to The Ceramic Machinery Company, Hamilton, Ohio. Filed April 25, 1905. Serial No. 257,373. The combination of side walls, brackets therein, fireclay slabs resting on the brackets, a relatively long retort third lever extending through and movable in the foot-rest and provided above the foot-rest with a pedal; the said third lever being arranged alongside the second-



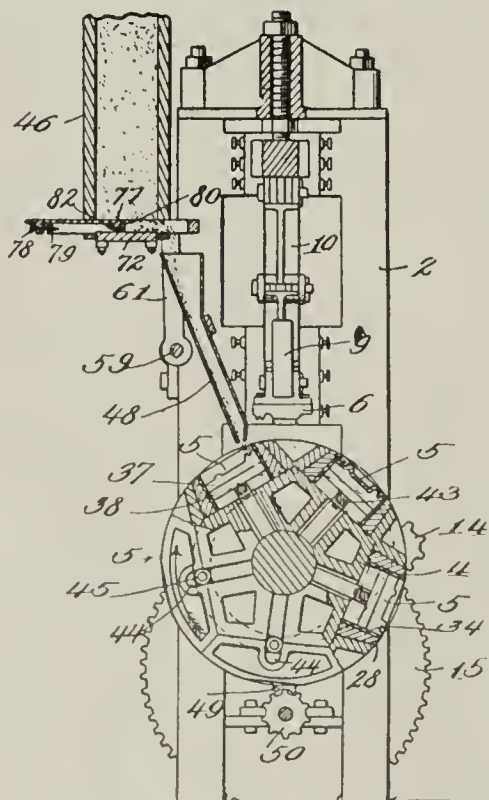
named lever and one of the two last mentioned levers being provided below the foot-rest with means for co-operating with the other, whereby one lever is movable forward by the other and is also movable forward independently of such other.

977,435—Irrigation tile. James E. Connor, Gillespie, Ill. Filed May 6, 1909. Serial No. 494,283. A fitting for use in irrigation



conduits, consisting of a section of porous pipe of T form, open at its aligned terminals for connection with contiguous pipe sections, and closed at the end of the lateral branch to provide a trap for the fluid passing through the conduit.

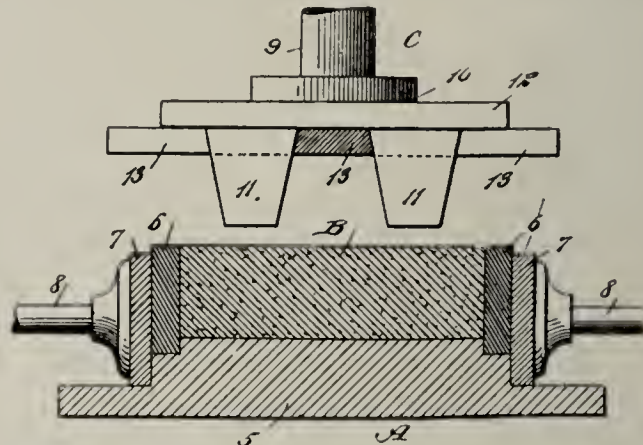
984,933—Machine for pressing plastic material. Abraham B. Klay, East Sparta, Ohio. Filed Dec. 14, 1909. Serial No. 533,092. In a machine for pressing plastic material, the combination with a pair of companion dies which have a relative approaching movement, and a die box which incloses the dies when the latter are operatively related, of a lining interposed between the dies and the die box, the lining being of a construction whereby its dimensions may be regulated within certain limits, and irrespective of its dimensions within said limits, forming an uninterrupted surrounding inclosure for the dies in the operative relation of the latter. In a machine for pressing plastic



material, the combination with companion dies which have relative approaching movement, of a die box which incloses the dies when the latter are operatively related, the die box including a frame which has its inner faces inclined outwardly in convergent relation, and a plurality of wall members movable inwardly and outwardly of the frame and secured against the inner faces thereof for sliding movement and screws

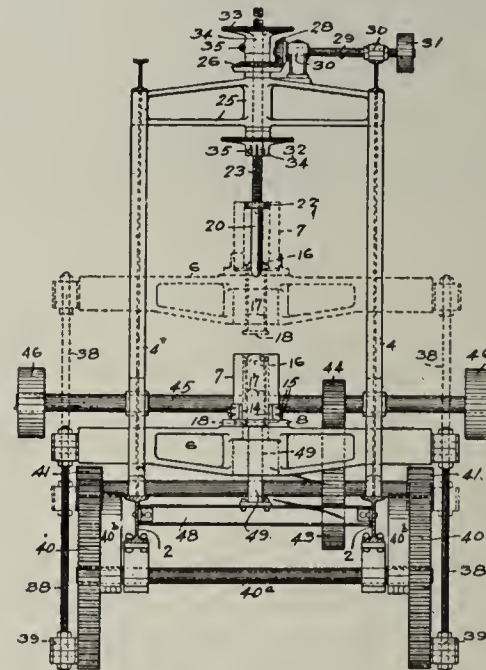
fitted in the walls of the frame and having threaded engagement with the wall members to produce the movements thereof.

986,701—Apparatus for molding clay articles. William D. Frerichs, Tottenville, N. Y., assignor to Atlantic Terra Cotta Company, a corporation of New York. Filed Feb. 15, 1908. Serial No. 416,007. An apparatus of the class described, comprising a receptacle for the material to be molded, a plunger having separate projections, means to force said projections



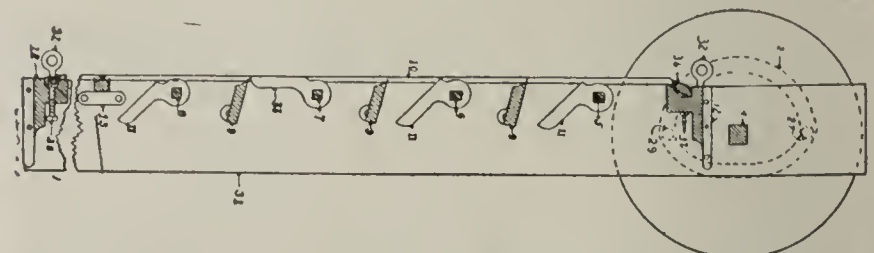
into the material and a strip between the projections which at the completion of the stroke will lie between the receptacle and the plunger face whereby overflow passages will at all times be maintained around the edge of the receptacle, said strip being separable from the plunger whereby it may be held down upon the withdrawal of the projections from the material.

981,839—Machine for making hollow brick. Ira W. Brison, Aspinwall, and James A. Hunter, Monongahela, Pa. Filed April 25, 1910. Serial No. 557,476. In machines for making hollow brick, the combination with a suitable frame, of a reciprocating frame, a mold carried thereby, a stationary cross-beam at the upper end of said frame, a rotary screw-rod extending through said cross-beam, means for rotating said screw-rod, a core secured to said screw-rod, and hand wheels above and below said cross-beam for raising and lowering said screw-rod. In machines for making hollow brick, the



combination with a suitable frame, of a reciprocating frame, a mold carried thereby, a stationary cross-beam at the upper end of said frame, a rotary screw-rod passing through said cross-beam, a pinion engaging said screw-rod, means for driving said pinion, a hand wheel above said pinion engaging said screw-rod, a hand wheel below said cross-beam, and a core secured to said screw-rod.

986,132—Sectional building-block. Ferdinand Burchartz, New York, N. Y. Filed June 21, 1910. Serial No. 568,198. A building block, comprising an open ended outer section and a separate inner section fitted within said outer section and having spaced connected portions arranged to close the opposite open ends of said outer section, said outer section completely surrounding



the inner section in a direction at an angle to its axis. A building block comprising an open ended tubular outer section and a separate I-shaped interior section adapted to slide within the outer tubular section and completely close the ends thereof.



Conditions from the Atlantic to the Pacific as Reported by Our Expert Observers— Market Fluctuations and Industrial Prospects

SPARKS FROM THE WIRE.

The Hanover (Pa.) Brick Co. has finished operations for this season. During the past summer they manufactured 1,500,000 brick, most of which were sold in Hanover and the immediate vicinity.

The Clay Products Co., Sioux City, Iowa, has filed articles of incorporation authorizing a capital stock of \$1,000,000. This is said to be the largest capital stock for a manufacturing company recorded in Iowa for some time back. The state gets \$1,018.00 in fees from the company, which will manufacture brick, drain tile and other clay products. The incorporators are: D. C. Shull, C. M. Stillwell and G. N. Fairchild.

Ed Aylward, a kiln burner employed at the plant of the Northwestern Tile & Clay Products Co., Emmetsburg, Iowa, was struck and severely injured, recently, by a Rock Island passenger train.

The plant of the W. & D. Bell Co., manufacturers of brick, drain tile, chimney linings, flower pots, etc., at Quebec, Canada, which was destroyed by fire in June, has been re-built and will be ready for operation January 1st.

Leon Soision, a retired brick manufacturer, died at Connelville, Pa., on Nov. 22nd, at the age of 75 years. He was the father of fifteen children, twelve of whom survive him.

The brick manufacturing plant of Joseph Kentz, near Plateau Station, Mobile, Ala., was seriously damaged by fire on Nov. 16th. The main building and the warehouse were destroyed but the kilns escaped serious damage. The loss is estimated at about \$9,000, very little of which was covered by insurance.

The Worcester (O.) Shale Brick Works has resumed operations, practically all of the old men being at work again. Manager Barnhart states that the plant will probably run during the entire winter, providing the weather permits.

The James River Brick Co. has been incorporated at Norfolk, Va., for the purpose of manufacturing and selling brick. The officers of the company are James E. Barry, president; Thomas E. Ferguson, vice president and Fred R. Berry, treasurer, all of Norfolk.

The Clark Coal & Brick Co. has been incorporated at Dover, Del., with a capital stock of \$250,000. The incorporators are Charles E. Clark, of Pittsburgh, Pa., Mr. Campbell Jones, Bethany, W. Va., and Ralph McConnell, Washington, D. C.

Operations have been begun at the plant of the Algoma Brick & Tile Co., Sault Ste. Marie, Ont. The company has just obtained articles of incorporation and has a capital stock of \$40,000. This brick yard is near to the Steelton boundary and with four other brick yards makes that locality the center of the brick making industry in Algoma.

An eastern newspaper states that the National Fire Proofing Co., Pittsburgh, Pa., has secured the contract for all the hollow tile to be used in the 21-story addition to the First National Bank building of that city. The contract calls for 5,000 tons of fireproofing, which according to the contract must be delivered at night so as not to interfere with street traffic during the busy hours of the day.

Finley Mutchler of Columbus, Ohio, former president of the Moxahala Brick Co., now defunct, has been found guilty of obtaining money under false pretense from Joseph Wilds of Minneapolis, and has been sentenced to spend two years in the penitentiary. Mr. Mutchler was charged with having sold stock of the Moxahala

Company to Mr. Wilds, when he knew the stock was practically worthless. Mr. Wilds, after finding that he had been bunkoed, took the matter to the Grand Jury. The case will be taken to the higher courts.

A serious fire at the plant of the Watsontown Brick Mfg. Co., Watsontown, Pa., on Nov. 15th, caused the loss of about \$6,000, which was almost entirely covered by insurance. The machinery most seriously injured was the elevators and screens.

The plant of the Melcher Tile Co., at Montezuma, Ind., which was leased to the National Drain Tile Co., of Terre Haute, Ind., was seriously damaged by fire on Nov. 20th. The main building, machinery and boiler rooms of the three-story brick structure, 60x270 ft., were destroyed. Among the equipment which was ruined by the fire was the tile mill, tile press, pugmill, hoist drum, two steam elevators, two gravity elevators, two sets of clay elevators, twenty thousand feet of steam pipe and a complete set of trucks and tile pallets. The loss is estimated at \$50,000 and no insurance was carried.

The Ballard Brickyard, formerly owned by Adam Neutzel, has been acquired by P. Marcuson and associates. The plant is located on the Great Northern railroad, north of Ballard Station, Seattle, Wash. The new owners propose to operate the plant to its fullest capacity, which is 45,000 brick per day.

The Rapid City Land Co., Nashville, Tenn., of which T. E. Allen is secretary, will open bids about Dec. 15th for machinery for a brick and tile plant of 20,000 to 50,000 capacity.

"BACK TO BRICK," THE EASTERN SLOGAN.

New York, Dec. 12.—The behavior of structural steel in the Eastern market is always a barometer of the state of the future brick market. When the demand for structural steel is light it is sure to indicate an impending falling-off in the demand for common and front brick and architectural and fireproofing terra cotta before long. When, on the other hand, the demand is brisk and the fabricators and mill men are reluctant to make concessions for new and desirable business, it indicates a firmer tone of the general building market and of big building operations in particular.

This is the case throughout the East today. Structural steel is in better demand than it was a year ago at this time. Furthermore, it is likely to be in constantly increasing demand for some time to come. The reason for this prognosis is the cheapness of good building materials and of building money and the inactivity of the real estate market during the last few months, indicating a surfeiting of property speculators. Many of these speculators will build this winter so as to sell when the spring season opens.

It is therefore apparent to brick interests in New York city and vicinity that the demand for brick this winter will be of larger volume than has characterized any winter within recent years. And if the systematic efforts made by some of the leading manufacturers in the Hudson river and the active efforts upon the part of labor interests to bring about a more general use of brick where concrete is now used, not only in this city, but throughout the state, the expectations of the brick makers will be fully realized by the time navigation reopens and the spring building movement begins.

In reference to the interest that labor is beginning to take in brick in New York city, it can be stated with good authority that this movement is destined to spread throughout the entire country. It is the direct result of an effort to place brick upon the topmost pedestal as a building material, by direct advertising and by word of mouth and correspondence missionary work. Senator Rose, president of the Greater New York Brick Co., has received inquiries from brick man-

manufacturers and associations in distant parts of the country regarding the publicity plan being taken up here. Beginning as an experiment in a small way, the results are already becoming apparent. An interest is being aroused in common brick that it has never before enjoyed. It is being taken from the commonplace and given prominence as a wholly dependable building commodity, by a most ingenious form of publicity, fuller details of which will be given in "Brick and Clay Record," in a subsequent issue.

In other words, a definite and comprehensive "Back to Common Sense" campaign has begun. Those builders who have heeded the smiles and wiles of the concrete god are coming back to the shrine of the clay god, who is supposed to preside over the destinies of good brick and of the brick building built of brick. One of the actual results obtained is the full co-operation of the labor unions who object to builders discriminating against skilled labor by employing unskilled concrete workers. Since the campaign began the labor headquarters here report that from seventy to seventy-five per cent of the bricklayers are now employed, whereas, it was rarely that 65 per cent would be employed in the middle of summer. In view of the fact that bricklayers are never 100 per cent employed, owing to inclemency of the weather and other causes, this condition during the latter part of November is looked upon as auguring well for the brick interests.

Following closely the action of the majority of Hudson river brick manufacturers to turn out brick of higher quality and to proclaim its advantages in building construction comes a similar action on the part of lime manufacturers having agencies in the East. This association has been formed for the purpose of standardizing their product and furthering its sale here. This fact shows that the demand for better brick and the publicity being given to brick as a building commodity will have ample support from the lime interests. H. A. Brocas, of this city was one of those who took up the matter and is pushing the infant organization to effective usefulness. This one factor will help in popularizing common brick during the winter, because lime is manufactured very largely for three specific uses, in laying up brick and in scratch and brown mortar. What helps lime also helps brick, and vice versa. If inferior lime, for instance is used in a brick joint, and the wall collapses, brick as a product, suffers just as much as though it were the brick that gave way. On the other hand, if good lime mortar is used and inferior brick goes into the wall, the appearance of the finished structure is far from being a good advertisement for brick.

The importance of this co-operation is bound to benefit the Hudson river brick industry. A large sum, larger even than that so far appropriated by the brick manufacturers, is to be devoted to publicity for lime and a campaign of education is to be undertaken.

Still another indication of the trend of the times is a movement on foot to safeguard the building public against doubtful Portland cement and this step is being taken by some of the most influential men in that business. The price has been cut so low (now cement is selling at 58 cents mill, two cents a barrel below cost of production) that manufacturers may have been or may be tempted to introduce economies which will detract rather than increase the quality of the material. To bring the industry back to a sane level and to safeguard the product from false reports concerning quality, the missionary movement was quietly started, but so far without appreciable results, as far as prices and competition are concerned.

Common brick interests are reporting an increased demand for their commodity while the cement interests here are bemoaning the fact that business is very bad and the demand light. This may be merely coincidental, but the unusual percentage of employment among bricklayers and the aggressive campaign to substitute this material in preference to concrete in municipal, state and private building operations, evidences a prosperous time ahead for clay products here in the East.

Current Local Conditions.

Top prices for the best Hudson river common brick now touch \$7.00. New Jersey commons bring from \$6.50 to \$6.75, at which prices sales are sometimes made of "run-of-kiln" Hudsons. Connecticut brick continues to come in at \$6.75, but is not an important factor in the market. Front brick is easy with fluctuating demand and with prices held rather close to list, although exceptions are made now and then for desirable business.

The manufacturers are overhauling their plants, more thoroughly than is customary, to cut down as far as possible manufacturing costs next season. There is still no solution to the "light hard" brick problem and so especial attention is being paid to the kiln problem. The greatest need of the day is an automaton foreman who does everything else but drink. This would prove the ultimate solution to the "light hard," pale or half-burned brick problem and would put dividends of gold mine size in the coffers of the producers. If such a boon could come to the Hudson river brick manufacturer in the shape of a kiln that positively would burn evenly and perfectly a larger proportion of brick than the type of kiln now generally used in the district, it would be received with the utmost enthusiasm. The Eastern brick manufacturer who sells his brick in New York must find some way of eliminating losses from "light hards," which now are overflowing some of the up-river yards.

The condition of the retail market is strong as far as the Metropolitan district is concerned. Here in New York, there is talk of bucking the fixed price idea by making a deal with several Connecticut companies and a New Jersey manufacturer to break the market when the new covered prices become effective. Several attempts have been made to effect an organization sufficiently strong to carry this project forward, but the facts that the slogan of "Better Brick" has spread in the purchasing and manufacturing fields and, for the first time, the difference between good and bad brick is being preached to the consuming public, and that the Shoe-string builder and dealer" are being exposed, have so far barred any effective action toward this end. Negotiations are, however, on foot to induce some of the unassociated manufacturers of the Hudson river to enter the plan, but so far they have held aloof pending further conviction that the new selling arrangement is feasible. Inasmuch as the success of the new system cannot be determined until it has had an opportunity of operating a full year the prospects of a return to former chaotic conditions now seem remote.

Temporary Break in Prices.

New York prices for Hudson river common brick broke twenty-five cents a thousand on December 8. The reduction was made necessary because of a sudden curtailment in demand, owing to the heavy fall of snow and the inability of the street cleaning department to put strike breaking men on the carts, and the inrush of barges from the sources of supply to avoid being frozen en route to market. The result was that on Monday, Dec. 4, there were seventy-five barge loads at dock with probably fifty more coming down from Haverstraw and Newburgh, and due to arrive here by Friday.

The agents here were confronted with the proposition of taking care of 24,375,000 brick already in market, with 16,250,000 due to arrive in a few days with the market's temporary requirements only one and a half million a day instead of three and a half. It was not practical to advise manufacturers not to ship, because every day increased the risk of closing off further supplies for the entire winter, and the building movement here today is better than it has been at any similar time since 1907. It was apparent that New York could absorb more brick during the winter than was then in the market, but it narrowed down to a question of accommodating the reserve with no outgo to speak of.

When riding conditions did not improve on Tuesday and Wednesday and cargoes continued to come in from the North river yards, the demand had to be stimulated and a Christmas bargain counter in brick was announced at the West 52nd Street docks until the situation could be relieved.

At first there was a tendency on the part of those who had bought heavily at the \$7.00 level to complain, but it was quickly seen that it offered an opportunity for even greater profits in view of the fact that the reduction was merely temporary. The buying was immediately stimulated and, favored by several days of mild weather, and the movement was evenly maintained. During that time some of the dealers here covered for their future needs, and, as a large quantity of the incoming boats were already covered for the winter, they went immediately to the "crib" for call.

The cut in Hudson river brick had practically no effect upon the Raritan river or Connecticut brands. In the case of the Raritan river interests, they have not been

actively on the market for new business since the middle of November. The cut in Hudson prices served to place a little stiffer competition against the Connecticut companies, but they continued in the market.

It was stated that the present quotation for Hudson river brick would not continue long, and it is the general belief in the trade that the \$7.00 level will be restored as soon as navigation closes. The previous announcement made in these reports that after January 15 the market price for good Hudson river covered brick would be \$7.00 plus twenty-five cents for covering and twenty-five cents more for watching still holds good.

Building Market Generally Strong.

There are evidences aplenty that the building material market as far as the Metropolitan district is concerned is strong. The building plans filed in the first week of December show a continuation of this movement.

Interest Here in the Clay Show.

General interest is being aroused among Eastern clay interests in the big Clay Show that is to be held in Chicago on March 7-12. The "Back to Brick" movement which is attracting so much attention here in New York, is awakening manufacturers and clay interests in the cause of burned clay as a building commodity. It has stimulated interest in the general plan to popularize common brick, and already the Hudson river brick manufacturers are bestirring themselves. A sort of clay patriotism is being aroused, the East apparently showing a disposition to show architects, builders and owners that there is as much progressiveness here as there is in the West. The tile manufacturers have the matter under consideration, the architectural terra cotta interests have been approached, and R. C. Penfield, of the Exposition Committee, of 50 Church street, New York, is working hard to interest the clay people here. There is some talk of a large body of the Hudson river manufacturers combining in an exhibit.

Big Deliveries of Jersey Brick Here.

It is said that more brick will be delivered in New York this winter than in any similar period in the last half decade. Of course this can only be estimated now, but the fact that the New Jersey Clay Co. and the Sayre & Fisher Co. have contracts for the delivery of more than 33,000,000 brick during the winter, for the Woolworth, McAlpine hotel and the Grand Central Terminal buildings, in addition to the normal movement of three and a half million Hudson brick a day would seem to take care of about 310,000,000 brick this winter, in this city alone. The Raritan river kilns have about 185,000,000 brick on hand, either in shed or contracted for, and the estimated amount of brick up the Hudson now is 290,000,000. The New Jersey contracts run well into the second quarter, so that it is considered a conservative estimate to say that provision must be made for 310,000,000 brick, most of which will come out of the Hudson river yards.

What Building Superintendents Say.

Your correspondent interviewed Superintendent Henderson of the Bronx & Simmons Co. of Queens regarding the building year. The former said:

"If the large total of ten millions filed during October and the first half of November of 1910, which were rushed in to anticipate the encroachment order, were divided between the two years, I think the total for 1911 would not be so small by comparison with the preceding year. Of course, it has been a bad year at best, on account of depressions in business, but I think that 1912 will make a better showing."

Mr. Simmons has just completed the compilation of figures for Queens showing the operations in his department during the last eleven months, and also figures showing comparisons with 1910.

"All records have been broken," he said. "Up to the close of November permits have been taken out for a total of about 5,000 new buildings of an aggregate value of about \$21,000,000. This is an increase of 25 per cent. in the number of new buildings over the previous year and an increase of 33 1-3 per cent. in valuation."

Superintendent Miller, of the Manhattan Bureau of Buildings, endorses your correspondent's statements in

this and previous reports that the amount of building operations going ahead this year is as great and as valuable as that of last year.

"Our records have just caught up with those of 1910, and we still have a part of December yet to go, therefore 1911 probably will show an actual gain over the volume reported last year. This sets at rest the harmful rumors that building construction work is slack, and it proves that the building material interests have been too pessimistic. I look for a strong winter building movement, and I firmly believe that 1912 will be a record breaker."

Big Honor for Brick Manufacturer.

Wright D. Goss, president of the Empire Brick & Supply Co., with yards at Glasco and Stockport, and offices at 103 Park avenue, this city, received an appointment recently, that carries with it great honors. Mayor Gaynor appointed him a member of the harbor improvement committee, of which His Honor is chairman, to suggest to the National Rivers and Harbors Commission at Washington, ways and means for improving the condition of New York harbor. Mr. Goss returned from Washington on Friday enthusiastic in the belief that something will now be done in making shipping conditions in New York better. Calvin Tompkins, the Commissioner of Docks and Ferries of New York City, a building material distributor and producer of crushed rock and sand, was also appointed to represent New York at the conference.

The New Jersey Clay Co., with a plant at Matawan, N. J., has actively entered the New York market and is distributing between 16 and 20 million brick for the Woolworth building and another 8,000,000 brick for the Grand Central Terminal building. It is understood that the quotation was in the neighborhood of \$5.75 along side. The Sayre & Fisher Co., of Sayreville, N. J., is shipping between 7 and 8 million brick into this city from its works by lighter for the McAlpine hotel. The same company is supplying 3½ million common brick to the 80 Maiden Lane building and one million hollow brick.

General Outlook Throughout East Good.

Reports from all sections of the Metropolitan district indicate a continued steady call for common brick. Manufacturers are now overhauling their plants with the apparent idea of turning out a better grade of brick next year. Many of them are putting in new machinery and an increasing number are looking into the electric power question in view of the successful operation of this system on the Empire Brick and Supply Company's and other yards. Those manufacturers with whom I have talked speak as though they were not going to lose any opportunity for getting their costs greatly reduced by installing more efficient machinery and equipment this winter.

IOWA NOTES.

Official figures just issued by the Iowa Secretary of State show that Woodbury county led all others in Iowa in the amount of common brick manufactured in 1910. The total amount of brick made in Marshalltown during the year was valued at \$303,111, while Sioux City's nearest competitor, Des Moines, manufactured brick to the amount of \$185,014. The statistics were compiled by Prof. Ira A. Williams, of Ames, secretary of the Iowa Cement Users' Association. The leading Iowa clay products cities in the various counties are as follows: Cerro Gordo county, Mason City; Webster county, Fort Dodge; Polk County, Des Moines; Woodbury county, Sioux City.

KENTUCKY.

We are informed that W. F. Robinson has just completed the installation of machinery in a brick and tile plant at Maceo, Ky. Among the machinery installed was a No. 1 Freese Combination Tile Machine, and two 26 ft. kilns were erected, in which two burns of tile have been made which have proven very satisfactory.

CALIFORNIA.

The Standard Oil Co. has ordered one million brick from the Los Angeles Brick Co. This order is the second within six months, and the material is to be used in the construction of new stills at Richmond, Cal.

AUSTRALIA.

A company has been formed at Brisbane, Q., Australia, with a capital stock of \$500,000, to establish a plant for the manufacture of brick which will have a capacity of 70,000 brick per day. The company is largely composed of master builders and others interested in building operations.

THE EXPOSITION CITY.

Chicago, Ill., Dec. 13.—There has been a slight respite granted the contractors, and the weather has been more favorable for late fall operations as a consequence. The orders for brick and other building lines of clay goods given out earlier in the season are being rushed, and this makes it a trifle difficult for the supply men to meet the calls as readily as desired.

It is not probable that there will be any great number of new contracts made for a few months now, though the advent of favorable weather has acted as an incentive to get busy again. Consequently one hears rumors, if nothing more, of new orders and new work that will be given out in the near future. There is not much to be counted on at this season of the year, however, and the clay manufacturers in all lines are contenting themselves with the prospects and what can be secured for the future at this time.

The yards are all in active operation as yet. A larger share of them will, however, soon close down. As most of the yards are well supplied with brick there is no need for long continued operations this winter, and it is doubtful if any of the plants will operate throughout the entire winter season. There is, in reality, a slightly larger supply of building brick on hand now than is generally the case at this time of the year. This has not been so much due to any lack of demand as to the fact that the plants have been operating pretty steadily for months, and have made a very large amount of brick this season. The demand, while fairly good this year, has been a little less active than was hoped for at the beginning of the year.

One does not hear any complaints and there is a feeling of contentment and a hopefulness for the next year that indicates a very prosperous future for all lines for clay materials. There is no likelihood of any labor troubles and it is thought the recent difficulties experienced in this city will hardly be repeated in the future, and the outlook, not alone from this point, but from others as well, is favorable for an active twelve months in 1912.

Sewer pipe manufacturers report that the demand continues to grow less and less, and there is the same tendency shown, as in the summer months, to cut prices. The foolishness of this course does not seem to be grasped by some of the manufacturers, who apparently are beset by the idea that there is a profit in every order, even if it is sold below cost. The plants are seemingly active and are operating about as usual. With a slack demand and low prices there does not appear to be much hope of reaction of prices soon. There is every likelihood of the plants operating full time for the winter, in the face of these conditions.

Glen Ellyn, a village near to Chicago, is arranging to build twenty-three miles of brick and pipe sewers for its village system. The Marquette Construction Co., has the contract and this will mean some good orders for sewer pipe and brick manufacturers. The contract is a very fair one, and will require a considerable amount of pipe and brick. It is doubtful if there will be much done on the actual work, however, until next spring.

Face brick are in fair demand now. Some new orders are being noted and a rush is made for the orders that are on the books. Terra cotta is still holding up well. The orders given earlier in the season were ample to keep the plants in active operation for the rest of the year, and there will be other business aside from this according to present indications.

The headquarters of the Clay Products Exposition is a very active place these days, and there is a feeling that the big show will be an event to be remembered. The time is not far away now and there is much to be done as yet by way of preparation. What Chicago intends to do on this occasion will be of the kind to make the whole country sit up and take notice. Chicago will do her part to give the brick game a well deserved boost.

The Midland Terra Cotta Co. is quite busy as yet, and sees no lessening in the demand for the next few months. The orders are so plentiful as to keep the plant in active operation continuously. Perhaps it is a good indication of the future to say that the company has just purchased from John Walker a tract of ten acres of ground in what is known as the Grant Locomotive Works Addition for \$18,000. The property which adjoins the present plant was purchased for future use as a site for extensive additions to the present plant.

Mr. E. G. Kimbell, manager of Meachem & Wright Co., says the demand for brick has been looking up of late. There is not a great number of new orders, but there is enough activity to the trade to make the situation inviting looking for the coming month and very fair at the present time. The sunshiny days have the effect of making the contractors step lively and their demands must be met in a hurry. He has no thought of a dull winter, and has everything to look forward to now.

The Curtis Brick Co., find the demand for building brick to be very fair. The plants of the company will be operated for a short time longer and will then be shut down for the winter. The company has about the usual supply of brick on hand now.

Thomas Connelly has been finding a decline in the call for sewer pipe and other clay lines within the past few weeks. He says he does not feel that there will be any unusual activity this winter. His plant will be kept in full operation throughout the cold months but there will be little activity looked for in the way of sales for present delivery. He says prices are way off, and the outlook in this way does not offer any very favorable prospects now.

The Wisconsin Lime & Cement Co. is inclined to feel that there will be little in the way of orders for a few months in face brick. Mr. Cormack so stated, and he looks at the matter in a philosophical way and says he does not expect a return to real activity until spring opens.

The National Brick Co., reports that business continues to be very fair and there is enough demand to keep things moving along in a moderate way and while they have a trifle larger stock of brick on hand now than usual at this time of the year, all will be needed for the early spring demand that is sure to come.

The Jenkins & Reynolds Co., state that a noticeable increase in demand has been noted within the past few weeks. Mr. White feels hopeful over the prospective demand for the coming months as indicated at present.

Mr. C. Weigel, representing the Hebron (N. D.) Fire & Pressed Brick Co., was a recent Chicago visitor. He reports their plant in prosperous condition with a good demand for their product. They are contemplating extensive additions to their plant in order to take care of the demand, and for this purpose will increase their capital stock.

Mr. J. H. Graham of Inglewood, Ontario, a representative of the Hamilton (Ontario) Sewer Pipe Co., was a recent Chicago visitor. While in Chicago, Mr. Graham visited various clay plants and was much interested in American methods of manufacture. He reports that the sewer pipe business is in a very prosperous condition in Canada.

Mrs. Anna Godfrey, recently created quite a stir in Chicago, when she cut her hair short, donned her husband's clothes and walked twelve miles to secure work at a brickyard to support her sick husband and four children. Charitably inclined people came to the aid of the destitute family and gave abundant relief. Mrs. Godfrey claims she made 1,000 brick per day while working in a brickyard with her husband in Vienna.

THE PACIFIC COAST REGION.

San Francisco, Dec. 11.—Regarding the recent effort to organize a brick manufacturers' association in San Francisco, W. W. Dennis, of the McNear Brick Agency, who was one of the first in the movement for organization, gives the following statement:

"Three months ago an attempt was made by the San Francisco brick manufacturers to get together and form an association for the advancement of the brick industry, and more particularly to solve the question which at present confronts

all clay manufacturers; that of brick versus concrete. The very fact that it requires millions of dollars to compete successfully in cement manufacture gives that industry power and money, and necessitates aggressive methods to create new business which must be taken largely from other branches of building products. The outputs of the cement plants are large, and necessitate the employment of competent men and intelligent means to advocate the use of cement. In California, the cement manufacturers have sold their product for years at a margin of profit that would enable them to use large sums of money for the purpose of creating new business.

"We feel that brick has many advantages over concrete, as to the quality involved in construction, and how best to bring this before the man who has power to specify the form the work shall take is before the manufacturer.

"The brick manufacturers located in San Francisco discussed organization at a luncheon, but the causes for our inability to form an association are many. We have just emerged from a brick war, lasting some three years, which has acted as an elimination process for many yards in and about San Francisco Bay. The requirements of this district have not exceeded 60 millions of brick annually, for the past three years, while a most conservative estimate of the possible output is 200 millions. The yards that have been eliminated by this condition still exist, waiting to share the result of the efforts of those in control in the way of better prices and better conditions.

"Each yard is represented by an agent who cannot always commit himself or his company to the payment of a sum large enough to be worth while for brick advancement, while the other yards which may have been crippled only temporarily are perhaps not in a financial position to pay pro rata or subscribe to a fund to better conditions in a market in which through competitive conditions they have not had much of a chance to dispose of any products at a living price for two years past. This being the case, we were unable at the time to organize any effective organization. We did succeed, however, in bringing the "battle-scarred heroes" together, and have brought about greater harmony among the few who have withstood the tempest. As one manufacturer stated, the worst enemies we have had to fight in the past have been one another.

"About six brick companies have controlled the local business during the past two years, and will continue to do so until the supply and demand are such as to warrant an increase in price that will permit other yards to seek San Francisco and vicinity for a market.

"The average price for 1910, was about \$6.25 per M. ex. cars or wharf, San Francisco. The average price for 1911, will be about \$6.65 per M. While the price since July 1 has been steadily maintained at \$7.00, many thousand brick were sold in the early part of the year that will bring our average down to the figure stated. We hope to have an average price for 1912 of not less than \$7.00 and as 1913 will be the banner year in construction work relative to the Panama-Pacific Exposition the manufacturers may have just cause to look forward to some profit at that time.

"It is a conservative statement, when I say that fully 100 million brick have been sold in the past two years below the actual cost of manufacture. We are just beginning to get a small profit for some manufacturers, and about cost price, at \$7.00 for others. So, when we compare our industry with that of the cement manufacturers, which has been operating on a dividend basis, we have put thousands of dollars back in the business on the wrong side of the ledger.

"The brick manufacturer has been trying to figure how long he could stand the game, while our powerful foe the cement man has been wondering how much greater proportion of our business he can get this year than last."

The Ione Fire Brick Co., of Ione, Cal., had a heavy fire loss about a month ago, but their business has not been interfered with in any way, as they had been working hard to accumulate a large stock for the winter trade. They had 1,500,000 brick on hand when the plant was burned, and they hope that this amount will carry them over the winter season. They are now busy with reconstruction, and will be all ready in the spring with a more efficient plant, embodying many improvements over the old one. Business with the Ione Fire Brick Co. has been remarkably good during the past year. Shipments have been heavy and the demand is in a flourishing state.

The Livermore (Cal.) Fire Brick Co. is now shipping its product over a wide area. Aside from the large quan-

tity sold to the Southern Pacific Railroad, shipments have recently been made to Mexico, Honolulu and Everett, Wash.

San Francisco brick manufacturers have been shipping out considerable material by water of late, large quantities going to Hawaii, the Philippines, and Astoria, Ore.

Arrangements are under way for the incorporation and financing of the Home Brick Co. at Willows, Cal., with the object of taking over the Willows Brick Yard, now owned by J. A. Apperson. The yard begun operations last year, and furnished brick for a number of buildings, but owing to lack of capital the plant has been idle for some time. It is believed that conditions are favorable for a resumption of operations, and a number of business men are interested in the project.

The Los Angeles Pressed Brick Co.'s large plant at Richmond, Cal., is being kept very busy at present. Material is being furnished for the new Southern Pacific station at Sixteenth street, Oakland, and for a number of other large buildings in this vicinity, and it is reported that some brick from this plant has been shipped to British Columbia. The United Materials Co., representing the plant in San Francisco, reports difficulty in keeping up with orders at present.

S. D. Adkisson, vice-president of the Los Angeles Unit Brick & Tile Co., which has just started a branch at San Diego, Cal., has recently been in Bakersfield, Cal., where it is expected that another branch may be opened.

Gladding, McBean & Co., of this city, have taken the contract for furnishing terra cotta for the new St. Luke's Hospital on Valencia street, for \$23,760.

The Universal Ceramic Co. is now shipping 100 tons of talc daily from its pits at Riggs, in the Mojave Desert district, to its pottery plant in Los Angeles.

It is reported that J. J. Donovan has found in Santa Barbara county, Cal., a deposit of material suitable for the manufacture of assayers' crucibles, and contemplates the establishment of a factory at Richmond, Cal.

Work is about to be started at the new plant of the Simons Brick Co. at El Centro, Cal. Walter E. Simons, of the Los Angeles office, visited the work early this month, and stated that about 2,000,000 brick would be turned out during the coming season.

A marked change is predicted in the brick situation of the Hawaiian Islands as a result of the success of the Honolulu Lava Brick Co. in manufacturing brick from lava. The company now has a plant with a capacity of about 20,000 per day. Lewers & Cooke, the selling agents, are getting considerable business, and architects have specified the material for many new buildings. The brick is of the sand-lime type, but crushed lava takes the place of sand, and cement is now used in preference to lime.

A handsome residence of hollow tile construction, with plastered exterior, is just being completed for Mrs. S. E. Newbury on Arbor street, Los Angeles, at a cost of \$12,000. Plans were prepared by Architect Frank M. Tyler, and the construction work was done by Thos. Norton.

An attachment was served early this month on the new plant of the Silica Brick Co. at Sacramento, Cal., to cover a judgment of \$22,400 asked for by J. P. Dargitz, who is suing for payment of promissory notes.

A large amount of brick will shortly be required for the construction of a new asphalt refinery at San Luis Obispo, Cal.

J. Roberts, of Missoula, Mont., has been looking over the field around Olympia, Wash., with a view of establishing a pottery plant.

KANSAS AND THE SOUTHWEST.

The Penfield brick setting system is being installed at the plant of the Humboldt Brick Mfg. Co.'s plant, Humboldt, Kan. This machine will assist greatly in increasing the output of the plant. We are told the Humboldt company recently drilled for gas and brought in a good well.

The Sunderland Bros. Brick Co., of Omaha, Neb., have been awarded the contract for all the tile floors in the Woodmen of the World building to be erected at Omaha.

This is said to be the largest tile contract ever awarded in Omaha, and will give employment to a large force of skilled mechanics of Omaha, who are often unable to find steady employment at their trade during the winter months. All the floors in the corridors, toilet rooms and other public spaces will be of tile, amounting to a total, approximating 40,000 square feet. The floors will be laid at the rate of two each week.

The Coffeyville (Kan.) Brick & Tile Co. has added another kiln at its plant, which will make six in all.

We are told that the Pawhuska (Okla.) Vitrified Brick & Tile Co.'s plant has been sold to Charles A. Hoshour, of the Cleveland (Okla.) Brick Co. It is said that efforts will be made to purchase another yard East of Pawhuska and consolidate the two plants, and the same will be under the management of the Cleveland Brick Co. Mr. Hoshour and his associates are experienced brick men, and have great confidence in the success of the business at Pawhuska.

The demand for brick at Little Rock, Ark., is reported to be up with the supply at present, although some time back it was rumored that much construction work there, was being delayed on account of the shortage of brick. This rumor no doubt arose from the fact that the plant of the Arkansas Brick & Mfg. Co., was burned some time ago. This plant, however, has been rebuilt and now has a capacity of 250,000 brick daily, which no doubt will supply the local demand. The new plant will turn out dry pressed brick as well as common brick.

The Missouri Press Brick & Improvement Co., has taken out a permit to build a two-story building for stores and offices at the northeast corner of Grand Ave. and Victor St., St. Louis, Mo. The building will probably cost \$25,000.

Through an error the names of the Buser Bros., of Seneca, Kansas, were connected with an item concerning the Seneca Shale Brick Co. in a former issue of Brick & Clay Record. We are informed that they have no business relations with the above company. The plant of the Seneca Company is one of the busiest of the Kansas plants and has a capacity of 20,000 dry pressed brick, and 35,000 stiff-mud brick.

The A. J. Zilcher Brick Co., Austin, Texas, has secured the contract for 300,000 brick for rebuilding and extending the Power House at the dam.

E. A. Laughlin, N. J. Gifford and L. F. Spence were appointed by the Port Arthur, Tex., Board of Trade to look up the matter of establishing a brick plant at that place. Tests on local clay made at the Lake Charles yard show the adaptability of the clay in that locality for brick making.

THE CITY OF BROTHERLY LOVE.

Philadelphia, Pa., Dec. 11.—The year of 1911 is drawing to a close and, while many clayworkers in the various lines have not been as cheerful at all times as might be desired, still the fact stands forth that the year of 1911 has been a good one as a whole. The number of brick dwellings, public buildings, factories, etc., erected here this year has been as large as in any other previous year. Prices have not been as good, however, owing to many manufacturers getting down to rock bottom prices in order to get contracts.

Building brick has had a big year, paving brick has been in very good demand and at good prices, pottery lines, sanitary, electric, porcelain and dinner ware and fancy novelties have had a ready sale at all times, but possibly the output is a little less than usual. Terra cotta and sewer pipe have been somewhat shaded in prices, but are normal. The use of tile has largely increased. Every small house has a bath-room, and for walls and floors its use has doubled. For factories it is considered the cleanest and gives the best service for interior use in churches, schools, asylums, public homes, hospitals, libraries, theaters, municipal buildings, prisons, etc. Fire-brick has been somewhat quiet, owing to the fact that extensions and new steel plants have been held in abeyance, but they will come into their own later. Many hotels and apartment houses are being built or contemplated, and these use much tile, brick, terra cotta, etc. The great strides made in building electric roads and electrifying the steam railroads have greatly increased the demand for electric porcelain ware.

Alpine Lucas, who was with O. W. Ketchum, has organized the United Brick & Clay Products Co., 310 Morris building, and is handling a complete line of smooth and rough faced brick, hollow tile and other lines. On the walls of this office is shown a very good display of these materials, presenting an artistic effect.

The United Brick & Clay Products Co. have engaged H. W. Willett, who was a brickmaker, as one of their salesmen. They will also open an office at Washington, D. C., which will be in charge of O. A. Harvey, who was formerly a salesman for the Hayes Run Fire Brick Co. of Orviston, Pa.

Cooper & Lucas of the Real Estate Trust building report that there is a good terra cotta demand, and that business is good and prices have been going up some, which makes a stiffer market. They have recently furnished the terra cotta for a police station here.

The new city convention hall to be built, will be one of the finest of its kind in the world, and will require \$400,000 worth of terra cotta. There will also be a big brick order, and no doubt tile and other clay products in proportion.

O. W. Ketchum of the Builders' Exchange, making brick, fireproofing and terra cotta, says business has been good, and their manufacturing plant at Crum Lynne, Pa., has been very busy. Much work is in progress, and considerable more contemplated. The year has been a good one, and they look forward to a busy spring.

Remney & Son's brick plant at Headley street and the Delaware River, recently suffered a loss by fire of \$3,000.

The Egan Brick Co. has moved its offices from this city to the works at Tuckahoe, N. J. Mr. Egan thinks he can sell his product just as well at the plant, and be in better shape to look after the plant, where sand lime brick are made.

Dunn & Dolan of Green Ridge, N. J., had a \$1,500 fire at their brick plant. The loss was entirely covered by insurance.

Foundations have been begun for a one-story brick office building to be erected for the Beaver Clay Manufacturing Co. at New Galilee, Pa.

AN Atlas Engine will
not make better
bricks, but it will likely
make more of them.

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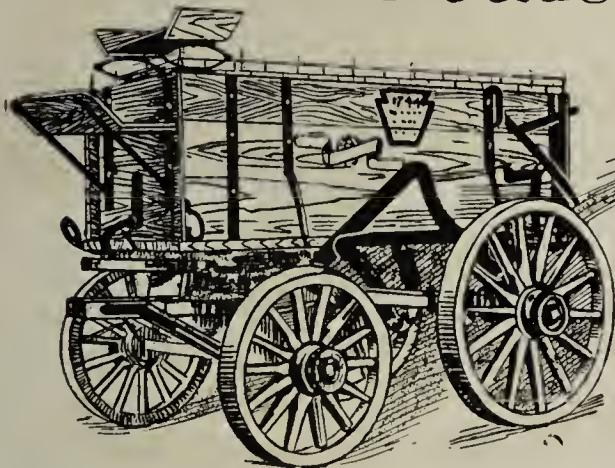
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Atlas Car & Mfg. Co., Cleveland, O.....	Back cover
Atlas Engine Wks., Indianapolis, Ind.....	480
Auburn Wagon Co., Martinsburg, W. Va.....	3

B

Berg Machinery Mfg. Co., Ltd., Toronto, Can.....	10
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C

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D

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E

Eagle Iron Works, Des Moines, Ia.....	59
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F

Fate Co., The J. D., Plymouth, O.....	74-75
Fernholtz Brick Machy. Co., St. Louis, Mo.....	13
Fiske & Co., Boston, Mass., and New York City.....	46
For Sale and Wants	41-44
Freese & Co., E. M., Galion, O.....	70-73
Frost Mfg. Co., Galesburg, Ill.....	9

G

Gabriel & Schall, New York, N. Y.....	44
Gandy Belting Co., Baltimore, Md.....	21

H

Haigh, H., Catskill, N. Y.....	46
Hendrick Mfg. Co., The, Carbondale, Pa.....	45
Hoehne, R. B., Bucyrus, O.....	47
Hunt & Co., Robt. W., Chicago, Ill.....	46

I

Imperial Belting Co., Chicago.....	21
Indianapolis Switch & Frog Co., Springfield, O.....	44
Industrial Car Co., West Park, O.....	57
International Clay Pro. Exposition Co., Chicago, Ill.....	48
International Sand-Lime B. & Machy. Co., New York City..	7

J

Jack, A., Clayburn, B. C.....	44
-------------------------------	----

K

Kushequa Brick Co., Kushequa, Pa.....	51
---------------------------------------	----

M

Main Belting Co., Chicago.....	21
Marinette Iron Wks., Marinette, Wis.....	58
Marion Machine Fdry. & Supply Co., Marion, Ind.....	49
Marion Steam Shovel Co., Marion, O.....	53
Markling, C. B., Canton, O.....	56
Martin Brick Machine Mfg. Co., The Henry, Lancaster, Pa..	60
Massachusetts Fan Co., Watertown, Mass.....	46
Mathews Gravity Carrier Co., St. Paul, Minn.....	23
Maurer & Son, Henry, New York City.....	50
Murphysboro Paving Bk. Co., Murphysboro, Ill.....	51
Murray Iron Wks. Co., Burlington, Ia.....	56

N

National Dry Kiln Co., Indianapolis, Ind.....	77
National Paving Brick Manufacturers' Association, Cleve- land, O.	51

O

Ohio Ceramic Engineering Co., Cleveland, O.....	Back cover
Ohio Galvanizing & Mfg. Co., Niles, O.....	47

P

Peck, Hubert E., Washington, D. C.....	44
Potts & Co., C. & A., Indianapolis, Ind.....	69
Pulsometer Steam Pump Co., New York, N. Y.....	58
Purinton Paving Brick Co., Galesburg, Ill.....	51

R

Raymond Co., The C. W., Dayton, O.....	16-17
Richardson-Lovejoy Engineering Co., Columbus, O.....	45
Rodgers Eng. Co., L. E., Chicago.....	3
Roessler & Hasslacher Chemical Co., New York.....	59
Rutgers College, New Brunswick, N. J....	50

S

Sackett Screen & Chute Co., Chicago.....	58
Sawyer Belting Co., Cleveland, O.....	20
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Scott-Madden Iron Wks. Co., Keokuk, Ia.....	59
Shawmut Pav. Bk. Co., Shawmut, Pa.....	51
Sirocco Engineering Co., Detroit, Mich.....	2
Steele & Sons, J. C., Statesville, N. C.....	76
Stephens-Adamson Mfg. Co., Aurora, Ill.....	22
Stevenson Co., The, Wellsville, O.....	62
Stewart Heater Co., Buffalo, N. Y.....	58
St. Paul Machy. Mfg. Co., St. Paul, Minn.....	56
Swift, E. A., Ottawa, Ill.....	45

T

Taplin, Rice, Clerkin Co., Akron, O.....	5
Tate, Jones & Co., Pittsburg, Pa.....	46
Terre Haute Vitrified Brick Co., Terre Haute, Ind.....	51
Thew Automatic Shovel Co., The, Lorain, O.....	54
Trautwein Dryer & Eng. Co., Chicago.....	43
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.....	20

V

Vulcan Steam Shovel Co., Toledo, O.....	54
---	----

W

Wants and For Sale.....	41-44
Weller Mfg. Co., Chicago.....	47
Wellington Machine Co., Wellington, O.....	64
Westinghouse Electric & Mfg. Co., Pittsburg, Pa.....	28
Whitcomb Co., G. D., Rochelle, Ill.....	21
Williams Patent Crusher & Pul. Co., St. Louis, Mo.....	18-19



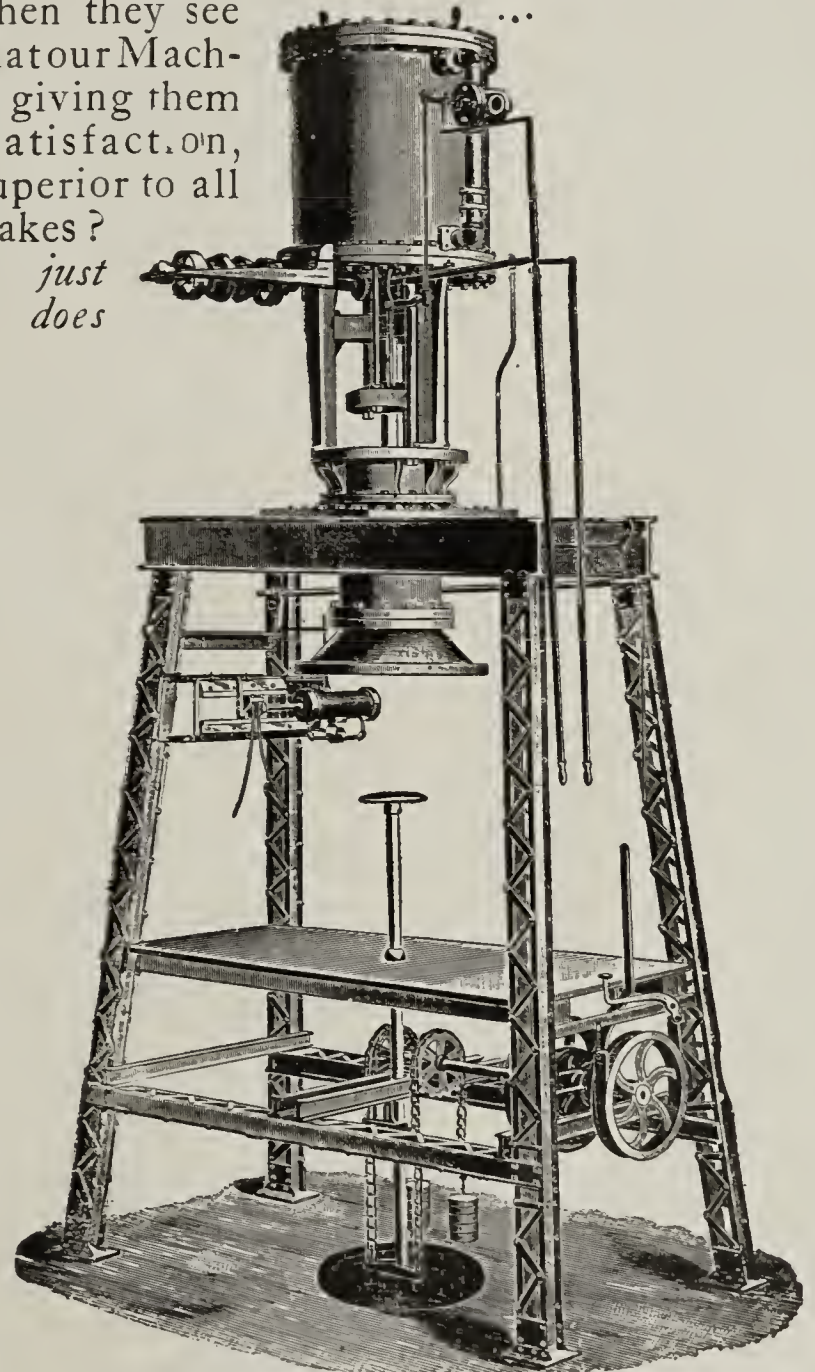
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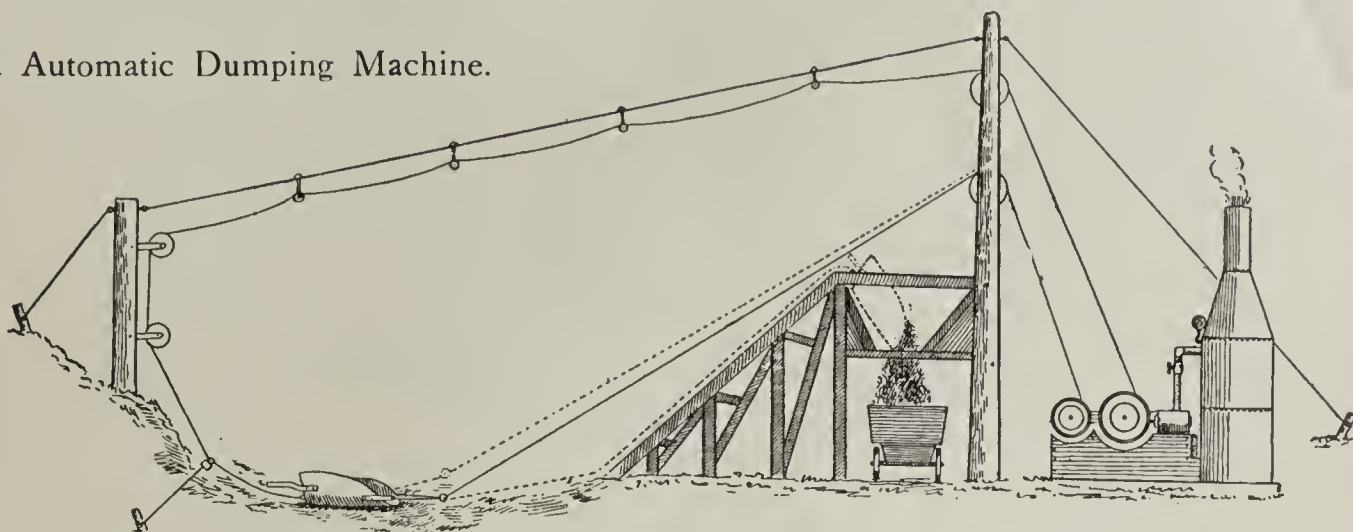
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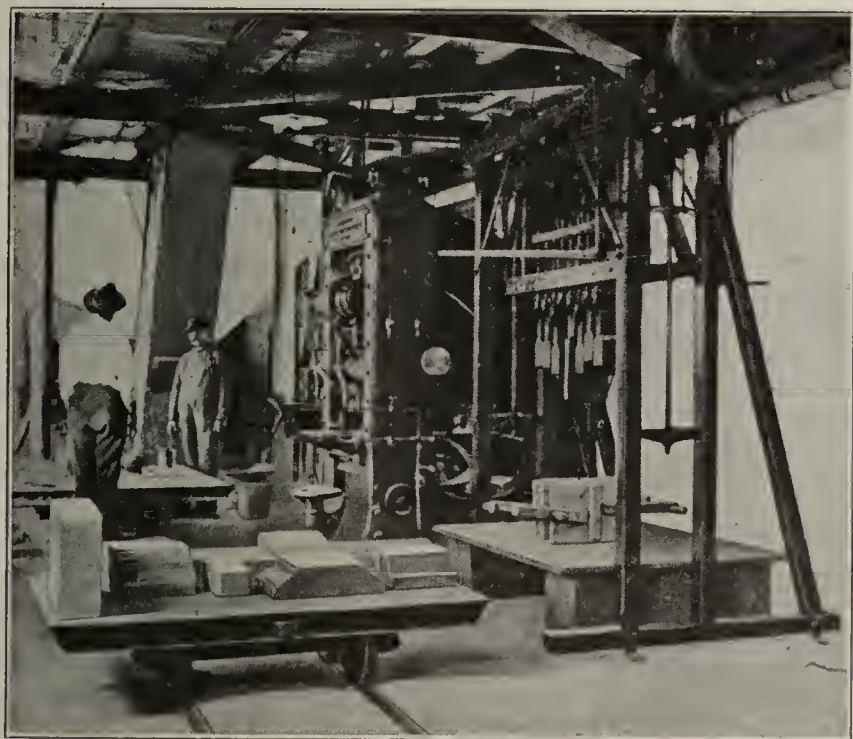
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It is during the frosty weather of the winter months that the brick and tile manufacturers make their plans for the new season and give their plants a general overhauling. When it comes to

Engines, Boilers or Dry Pans

there is just one thing for you to do and that is write to Galesburg. You can make no mistake. The name "Frost" has been identified with the clay industry for over 60 years. We have grown up with the business. We know what clayworkers need; and we are building boilers, engines and dry pans specially suited to their needs.

Frost Side Crank Automatic Engine

The Most Dependable Power Plant Engine that you can find. You get more for your money in one of these engines than you can find in any other make. Our engines are in use in hundreds of clay plants throughout the country, doing constant heavy duty and frequently subjected to large overloads.

Frost Dry Pans

If you are looking for a cheap pan, regardless of quality, don't write to us; but if you want the kind of a pan that is found in the best clayworking plants, the kind that will do your work and do it right, you certainly should write to us—that is the kind we manufacture.

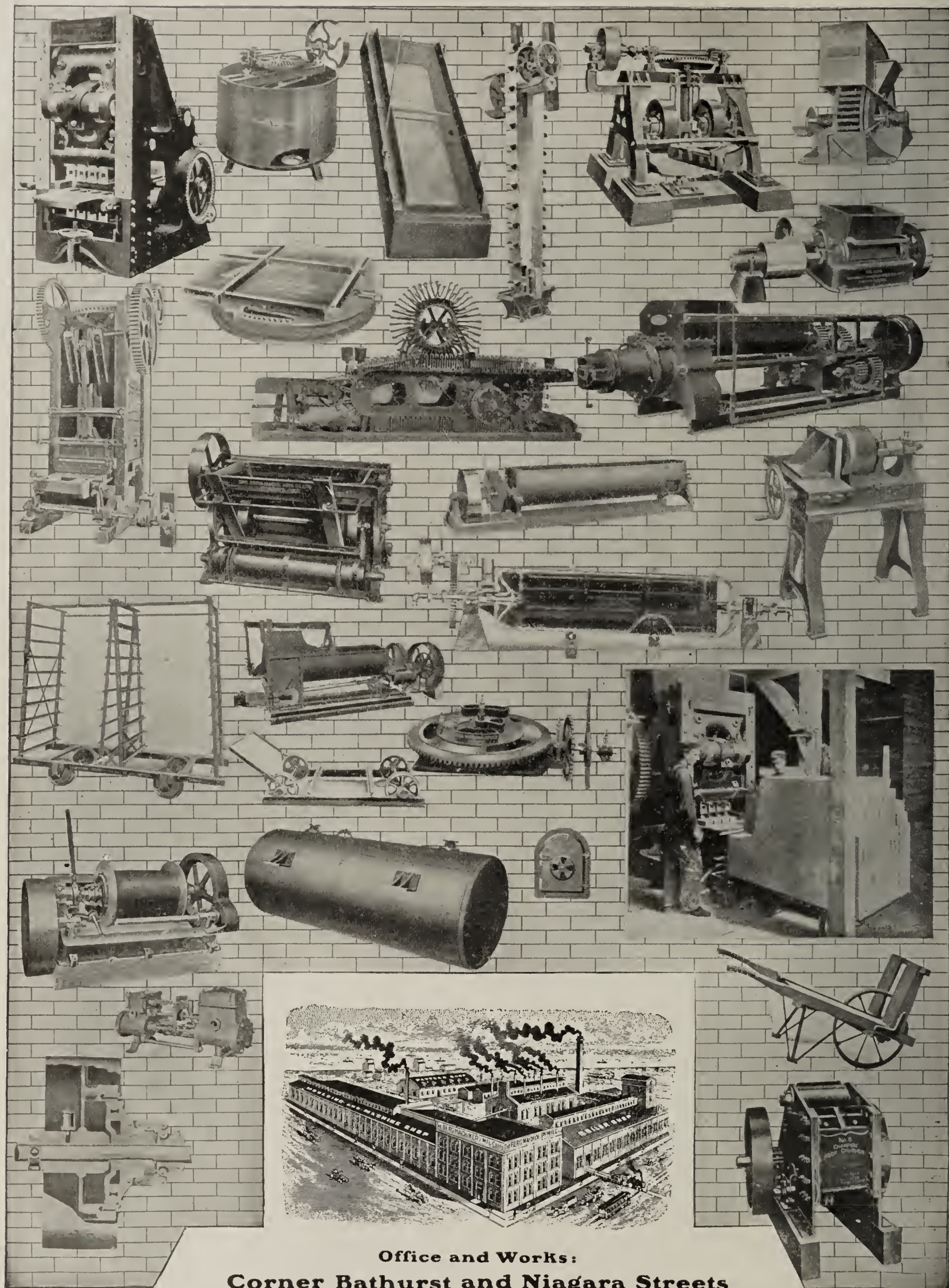
Our pans are built for accomplishing results that other pans fail to accomplish.

Tell us your difficulties and your problems, and let us advise you. Our suggestions and recommendations are at your service.

The *Frost* Manufacturing Co.

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GALESBURG, ILLINOIS

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The Berg Machinery Manufacturing Co., Limited
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The Boyd Brick Press in Canada

MILTON PRESSED BRICK CO.

Limited

DR. ROBERTSON,
President.

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Manufacturers of

High-Grade Pressed Bricks
and
Terra Cotta Mantels

All quotations are subject to change without notice. All agreements are contingent upon strikes or other delays beyond our control, and all contracts must be approved by the head office.

MILTON, ONT.,

Nov. 7th, 1911.

Messrs. Chisholm, Boyd & White Co.,
57th & Wallace Sts.,
Chicago, Ill., U.S.A.

Dear Sirs:-

We are pleased to advise you that the new Four Mold "Special" Boyd Brick Press which we recently purchased from you arrived in good condition and is now making bricks.

We have now six Boyd presses in a row and expect to be in the market for another in the course of a few months. It is now nearly twenty-two years since we installed the first Boyd presses.

We tore out the first one put in to make room for the new Boyd "Special" which is built on a very much stronger scale than the ordinary machine. However, we have still one of these old machines in operation and producing first-class bricks. For a number of years this machine worked night and day.

We might state that we are well satisfied with the Boyd press or we would not be using your machine exclusively.

We are satisfied that we are making the best bricks made in Canada with your machines.

Thanking you for prompt shipment of the last press, we remain

Yours truly,

J.S. Mc/

Milton Pressed Brick Co., Limited.

J. S. McCannell
Man'g Director

CHISHOLM, BOYD & WHITE CO.,

57th and Wallace Sts., CHICAGO.

“The Elwood” The Press with a Habit

That *Habit* is a GOOD ONE—being the making of *1st class brick* from *start to finish*—Has *no time for stops*.

Runs without noise or back-lash, because of the “*Downward Pull*” which brings all the strain against the solid castings and foundation.

Strain

Equalized

by

Two

Master

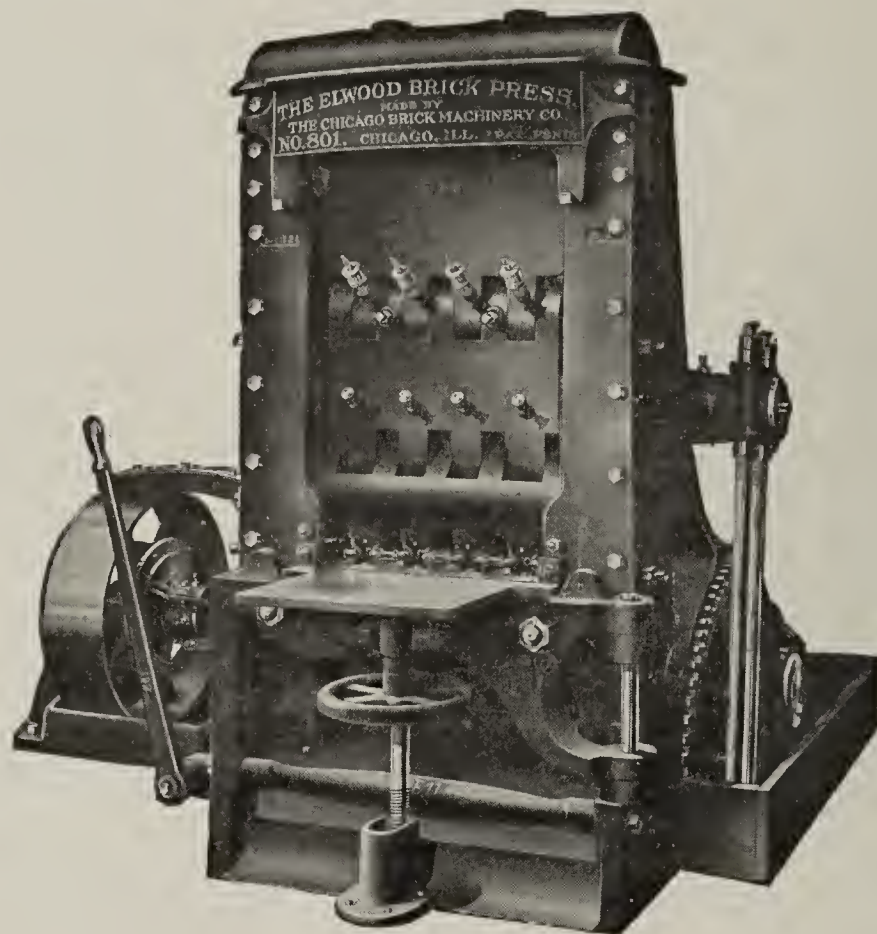
Gears

One on

Each Side

of

Press.



Removable

Mold

Box

Molds

Changed

in

Ten

Minutes.

Send for our No. 11 Booklet describing Press fully.

If in market for *Stiff Mud* or *Soft Mud Machinery* send in your specifications.

We are in shape to make *close prices* and *prompt shipment* of *yard supplies*—our No. 10 catalog will be sent on request.

Chicago Brick Machinery Co.

20 West Jackson Boulevard, Chicago

ALSO SOLD BY THE MANUFACTURERS EQUIPMENT CO., DAYTON, OHIO



ECONOMY

in Preparing Clay or Shale

FERNHOLTZ CLAY PULVERIZER IS A MONEY SAVER



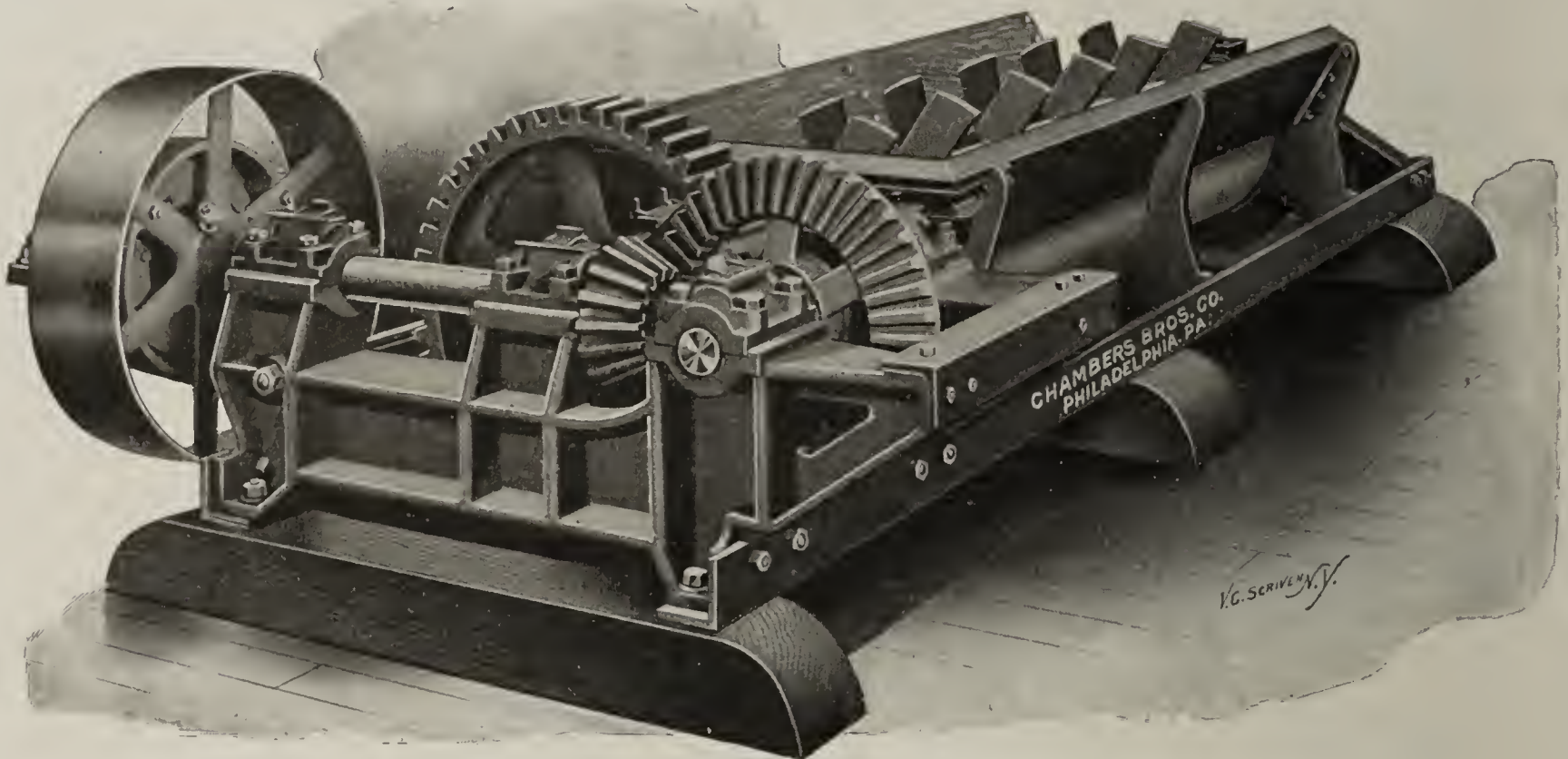
AT THIS TIME you are doubtless figuring on the repairs and new equipment you need in your yard for the next season, and you certainly should not neglect the important matter of improving your methods of preparing your material. You would make no mistake in installing one of these machines. It will save you money and improve the quality of your product.

¶ The pins are fitted with special set screws, which enables anyone on a brick yard to adjust new pins when the old ones become worn. They are fastened at each end with $\frac{5}{8}$ set screws and the heads are counter-sunk in the rings on cages to prevent wearing. The wearing parts of the pulverizer are all steel and all boxes are brass bushed and adjustable. The cages, both rings and pins, are entirely of steel, two stationary and three revolving. Our pulverizer has but one shaft and pulley, which does away with the constant springing of the hollow shaft which causes so much trouble in the old-style two-shaft machine. Extra steel pins can be furnished at a minimum cost, ready to place in a machine, but on ordinary clays one set of pins should last two seasons.

INQUIRE NOW FOR PRICES AND DELIVERY DATES

The Fernholtz Brick Machinery Co.
Boyle and South Vandeventer Avenues, ST. LOUIS, MO.

The Chambers Line of Clayworking Machines



Bevel-Geared Clay Granulator and Feeder, No. 14

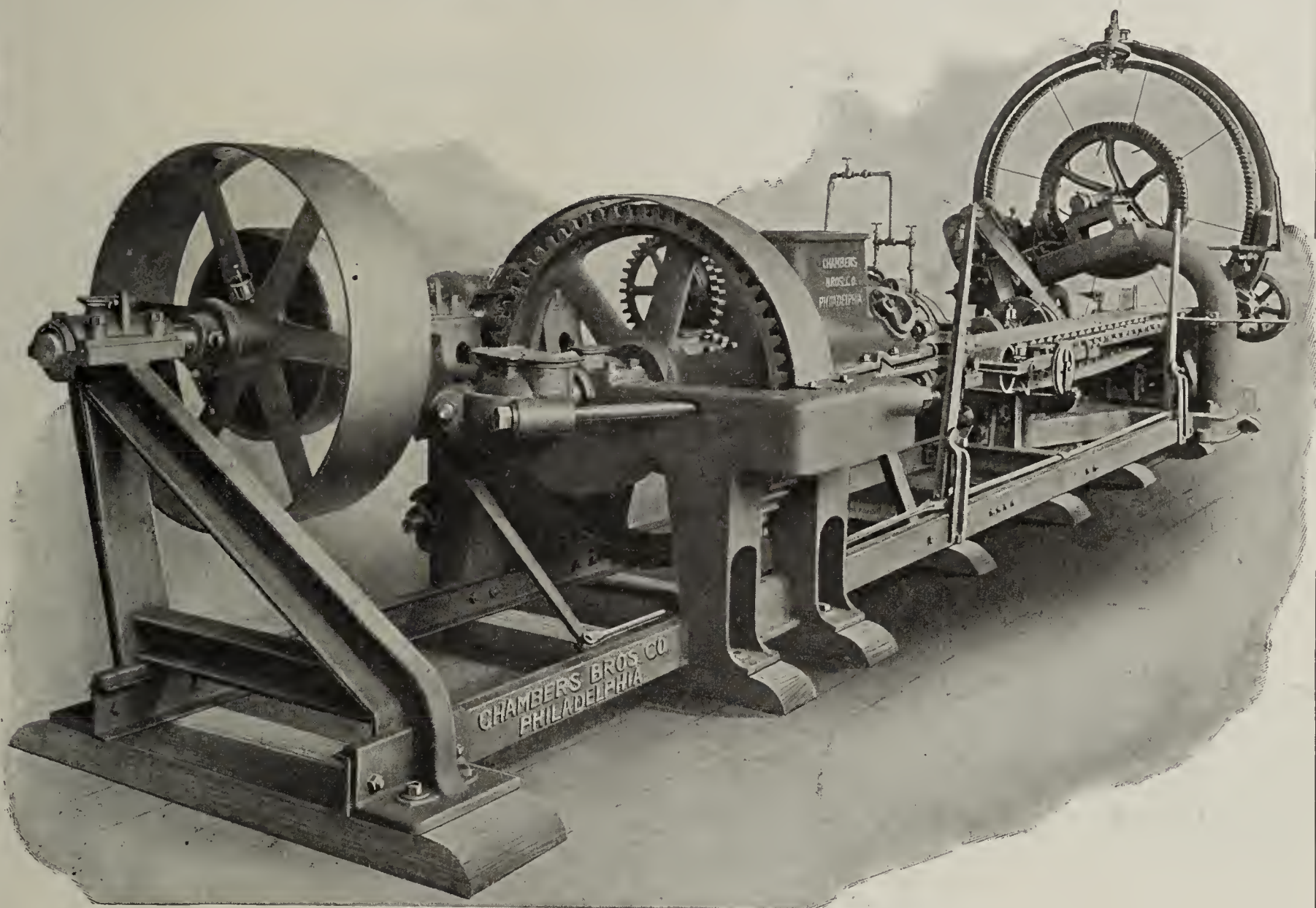
Granulators and Feeders Save Labor, Secure Uniform Operation. Five Sizes *Disintegrators; Fine Grinders; Dry Pans;* New Pattern *Elevators* and *Conveyors*.

Chambers Brothers Company

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The No. 10 Auger Brick Machine with No. 5 Automatic Side Cutter.
Cuts Building Brick, Hollow Brick and various thicknesses and lengths of Furnace Block material.

Auger Brick Machines of Various Capacities with Rotary
End-Cut and Side Cut Tables

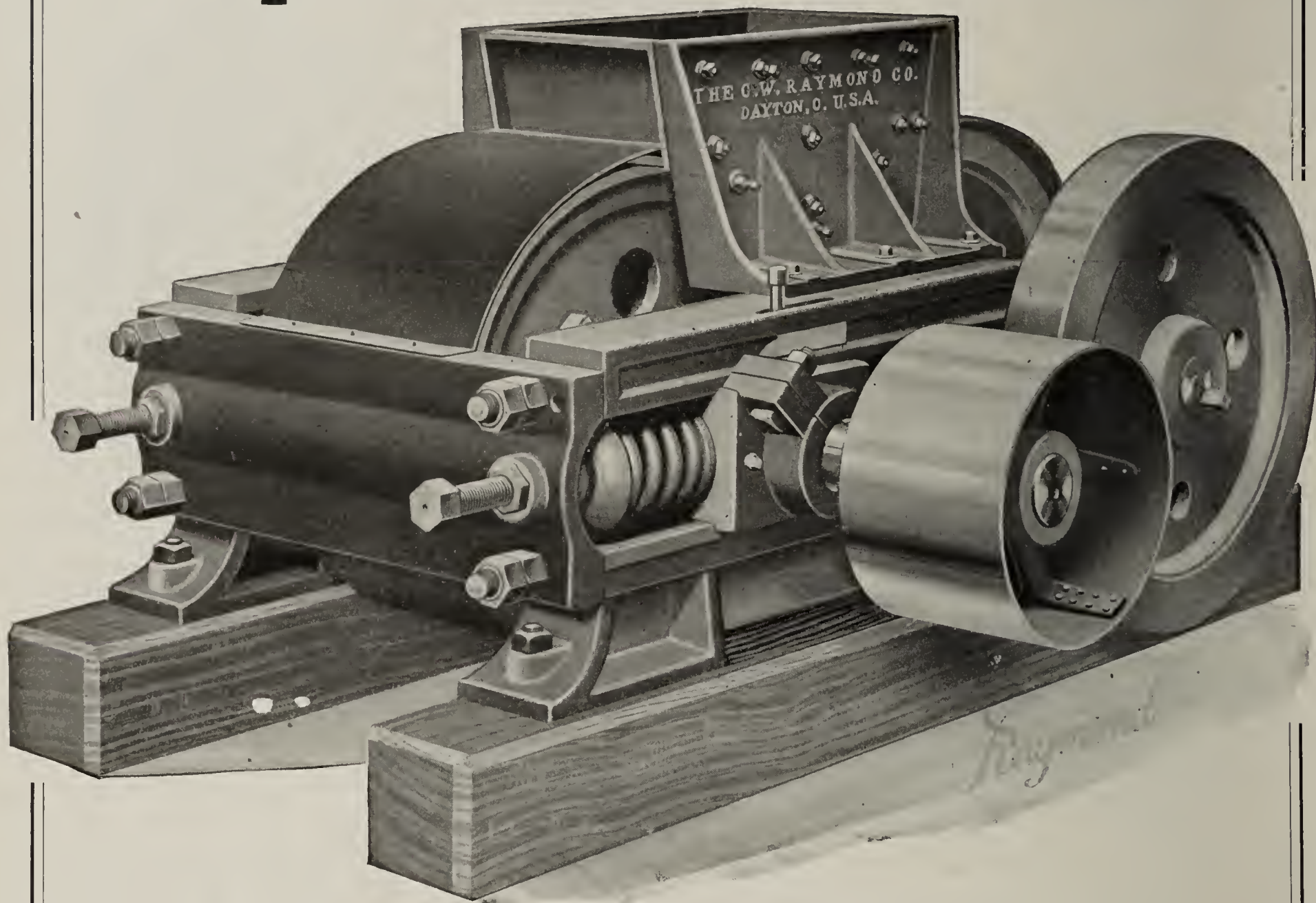
Special Machines for Street Paving Block

CHAMBERS BROTHERS COMPANY

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The Raymond Equal Roll Crusher



A new form of construction in smooth roll crushers, which abounds in intensely practical points.

The fast roll is held rigid in the framework while only the slow speed roll is adjustable, which allows the impact to be taken against a solid frame. This framework is held together by heavy through-going bolts, equalizing the strain on the entire structure.

The adjustable roll is relieved by heavy springs which allow the passage of foreign substances should any happen to get into the material unnoticed.

The bearings are equipped with oil reservoirs holding sufficient lubricant for a considerable time.

The scraper device is new. Write for exhibit 2115, which explains in full detail.

THE C. W. RAYMOND COMPANY

The Strongest Power in the World of Clay Working Machinery

Dayton, Ohio, U. S. A.

The Youngren Continuous Kiln

Since the absorption of the Youngren Kiln by the C. W. Raymond Company some two years ago, the many installations have demonstrated conclusively that there is not one iota of experiment in the kiln. Our many facts and figures may be easily confirmed by a little correspondence with its enthusiastic admirers.

Regarding experimentation along the lines of clay ware burning, there have been constant attempts at a complete revolution of the method of manufacture, drying and burning based upon false theoretical ideas, causing the expenditure of enormous sums of good money and resulting only in failure and financial embarrassment.

The Youngren Kiln cannot be even considered as in this class, as installations of several years standing are producing and will continue to produce the results we claim, in most instances going way beyond our expectations, as well as being capable of thoroughly vitrifying the ware, producing either oxydizing or reducing conditions.

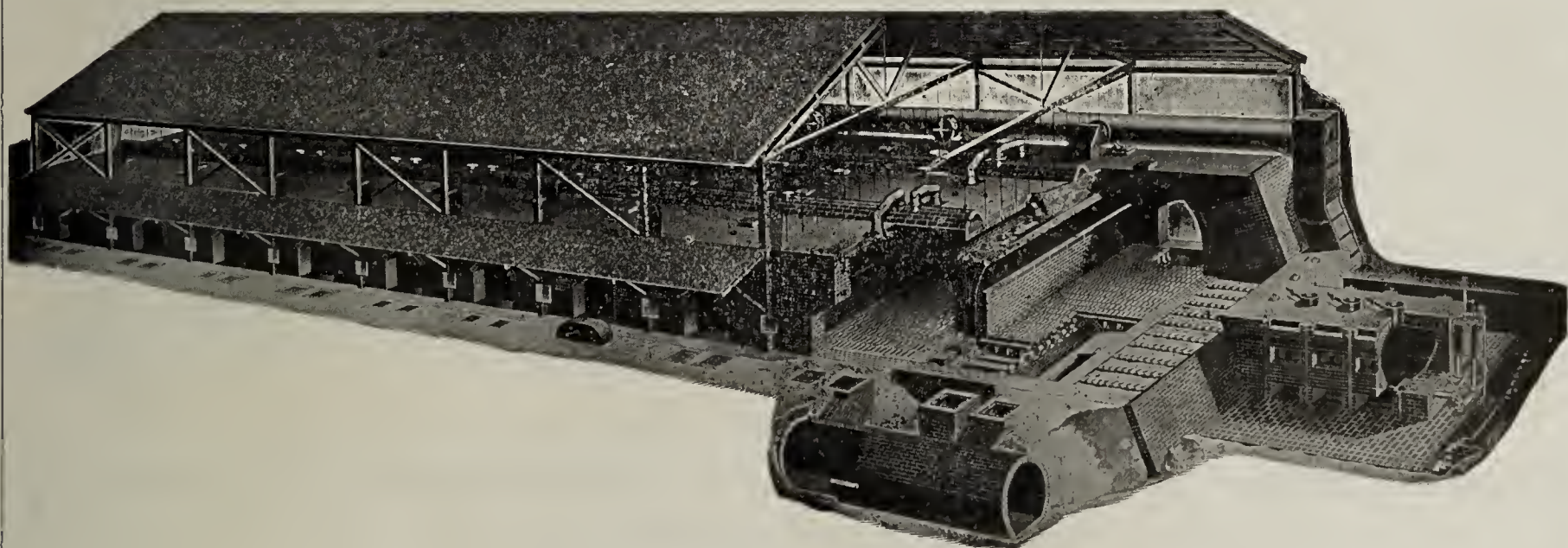
During the month of June, six kilns in well known plants will be started on their road to successful operation. The lighting of fires at Mason City, Iowa; Macon, Georgia; Bayne, Washington; Kachelmacher, Ohio; and Knoxville, Tennessee, will begin the daily burning of 325,000 brick, saving 60 per cent of the coal which would be used in round draft kilns.

Special Catalog upon Request

The C. W. Raymond Company

*The Strongest Power in the World
of Clay Working Machinery*

Dayton :: Ohio :: U. S. A.



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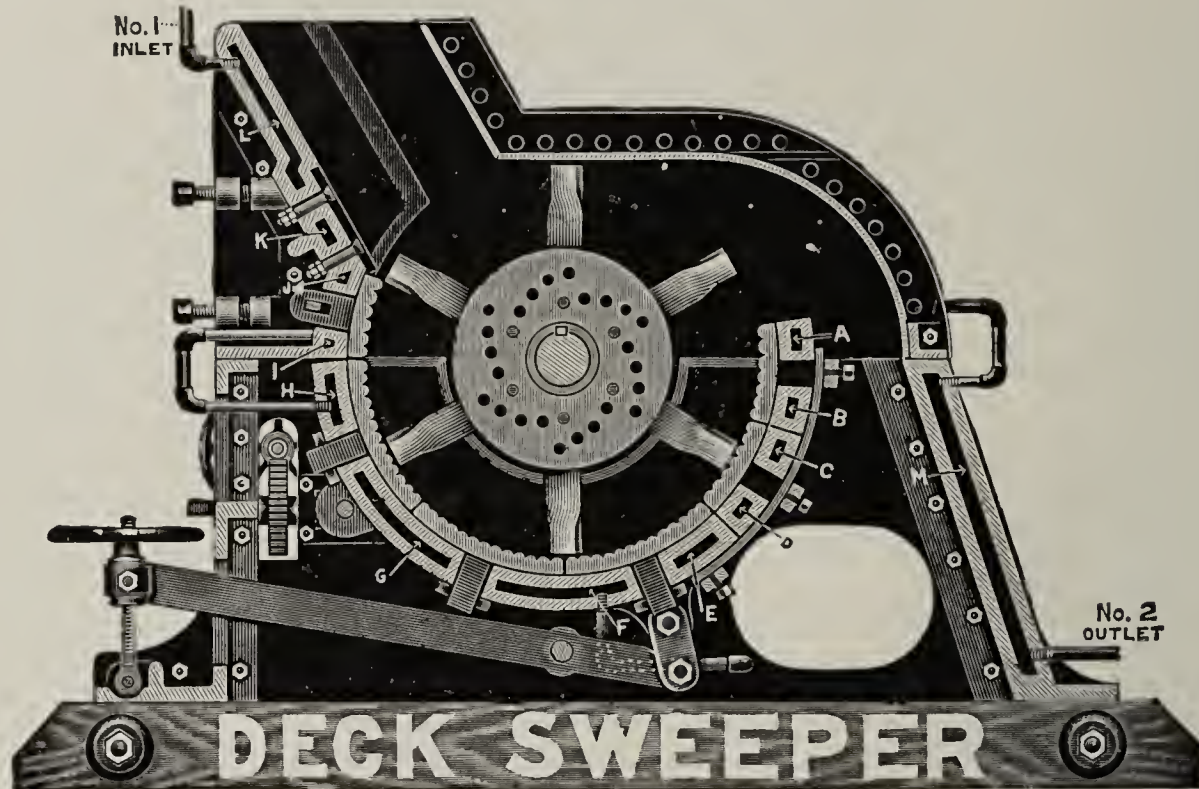
Williams Wet Clay Grinder

The only machine that will grind Clay and Shale from the bank at all times **without choking up.**

No cages to clog up. Material ground on steam heated grinding plates and discharged freely at back of grinder.

Hammers
Adjustable

Grinding
Plates
are adjusted
to
Hammers
while
Mill
is in operation
by
Hand Wheel
on
Outside of Mill



Made in
8 sizes, Capacities
from
5,000 to 300,000
Brick
per day

The only
Machine
of this
Character
Made

"ALL ADJUSTMENTS PATENTED"

Manufactured and Licensed Under 87 Separate and Distinct Patents

We have worked for 25 years to perfect a Wet Clay and Shale Grinder and our machine can now successfully handle any clay product that will make brick

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Williams Patent Crusher and Pulverizer Co.

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OLD COLONY BUILDING, CHICAGO.

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Over 2,000 of the Williams Hinged Hammer Crushers and Pulverizers in dally operation

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Lombard Brick & Tile Company

Lombard, Ill., Nov. 10, 1911.

The Williams Patent Crusher & Pulverizer Co.,
St. Louis, Mo.

Gentlemen:

Your letter of the 8th inst., at hand, requesting us to make a statement on the work of your No. 1 DECK SWEEPER. Since installing your machine in May of this year, we have run it CONTINUOUSLY, the machine grinding the clay so DAMP that it WOULD NOT PASS THROUGH OUR SCREEN.

We feel that we can not say TOO MUCH for this machine. as it certainly EXCEEDED our expectations of the same.

Yours truly,

LOMBARD BRICK & TILE CO.

Wm. Hammerschmidt.

WHY NOT FALL IN LINE THIS WINTER?
Get a Williams Grinder and Be Prepared for all Emer-
gencies Next Season

**This is the First of a Series of Letters We Shall Print
Proving Our Claims for the Williams Deck Sweeper**

Williams Patent Crusher and Pulverizer Co.

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OLD COLONY BUILDING, CHICAGO

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Over 2,000 of the Williams Hinged Hammer Crushers and Pulverizers in daily operation

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SAWYER BELTS MADE FOR CLAYWORKS

We know the hard, trying service to which belting is subjected in brick and tile yards. We have given the making of belts for such use our study for many years. That's why we can honestly say that SAWYER STITCHED CANVAS BELTING is the clayworkers' belting.



2,600 clay plants are using this belting because they have found it better than all others for their uses.

SAWYER BELTING IS MADE SPECIALLY FOR CLAYWORKING NEEDS

You will require a new belting equipment before next year's rush season commences, and you might as well figure on it now.

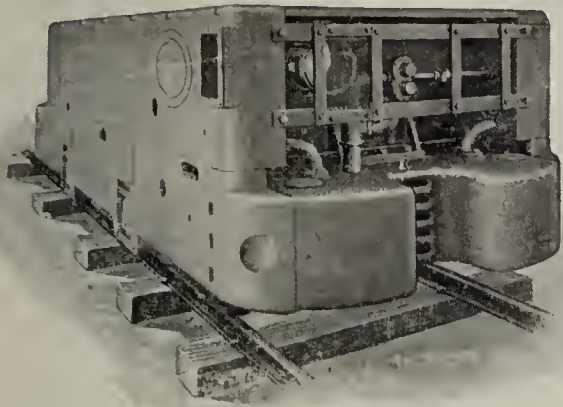
Whether for conveying or driving, you will find Sawyer Stitched Canvas Belting most suitable.

Let our Engineering Department FREE OF COST TO YOU figure on your next outfit. If you have any special belting troubles, let our Engineering Department advise you. As there will be no cost to you, and you will not be obligated in any way, it will pay you to take advantage of this service.

SAWYER BELTING CO., Cleveland, Ohio

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Gasoline Haulage Motors



UNDERGROUND TYPE.

Over 30 different companies using these motors for their main haulage.

Write for Bulletins.

GEO. D. WHITCOMB CO.
Rochelle, Illinois

ONE EDGE GREEN



U. S. PAT. OFFICE.

And This
TRADE MARK
On
Every
Roll of



GANDY Belting

These Two Identifying Marks Are Put There To Save You Money.

The many sad experiences we learn of every day where belt users are duped into buying one of the numerous inferior cheap imitations of **THE GANDY BELT** (red stitched cotton duck) make us more anxious to caution you to "Look for the belt with the green edge" and the trade mark shown above, every few feet of its length.

Remember, **THE GANDY BELT** is backed by 34 years of success, and not only is the most durable and satisfactory belting for driving, elevating and conveying, but costs only one third as much as leather and is 25% cheaper than rubber, yet will do the work equally as well.

We want to send you actual sample of **THE GANDY BELT** and additional proof of the big saving this belting would be to you.

Drop us a postal today.

THE GANDY BELTING CO. 732 W. Pratt Street
Baltimore, Md.
New York Office—88-90 Reade St.

"Leviathan" Belting Is No Better

on paper than are the ordinary Tom-Dick-and-Harry belts. It is among the grit and dust, and at the arduous service required in a clay plant that it excels.

This is not said for the benefit of the initiated. They know.

MAIN BELTING CO.

Philadelphia Chicago New York Boston
Pittsburgh Seattle

For Sale in Canada by the Main Belting Co.,
of Canada, Limited

41 Common Street, :: :: Montreal

Are you still using canvas belting made the same way it was 50 years ago—with only one set of stitching? If you are, it's high time we told you about

Rexall Double Stitched Belting

"double-stitched"

Double
Stitched



MEANS
Double
Life

Trade Mark Registered

Rexall Double Stitched Belting is made by first stitching the inner plies—next putting on the cover, and then giving it a second set of stitches

It costs no more than the ordinary canvas belt, but is guaranteed to last three times as long.

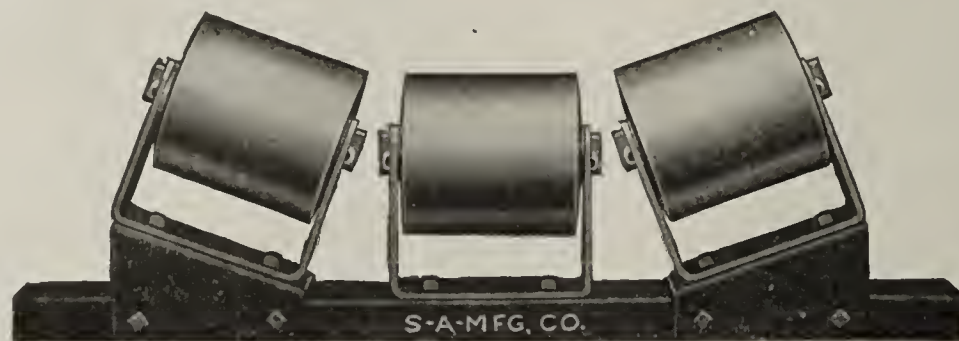
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IMPERIAL BELTING COMPANY

"Everything in Belting"

Chicago, Ill.

A New Carrier for Belt Conveyors



Ball Bearing Type



Grease Cup Type

(Convenient Arrangements of the Unit Rolls)

THE "S-A" Unit Carrier is formed of a combination of individual unit rolls mounted on steel plate brackets. The units are exact duplicates and with various combinations all styles and sizes of carriers may be formed. The Unit Carriers are adjustable to every condition and absolute flexibility is provided. As each roll has two supports, the maximum strength is secured, although the carrier is of lighter weight than any other carrier of like capacity. Each type of Unit Carrier has its peculiar advantages and offers superior service at less cost than any other type of carrier.

Every user of belt conveyors should study the advantages of this type of carrier. Write for bulletin B-12.

Stephens-Adamson Mfg. Co.

Aurora :: Illinois

Chicago New York Pittsburgh Portland Birmingham Los Angeles San Francisco



SAVE BRICK—SAVE EXPENSE

A small investment in a Mathews Gravity Brick Carrier will bring astonishing results in any brick yard. Not only will it save in labor—that's one of its strong points—but it will save loss from chipping and breakage—which are the expensive features of handling by the wheel barrow method. It's just a simple device—inexpensive to buy and no cost to operate, as brick travel by their own weight any desired distance on a slight grade.

How can you continue to be satisfied with your present expensive, slow method of handling your product when we offer you this means of increasing the efficiency of your plant and reducing your expense—for just a small original investment? Write us at once. Place an order now for future delivery. Plans and estimates cheerfully furnished.



The above illustration shows the Mathews Gravity Brick Carrier at work in the plant of the Lone Star Brick Co., Ferris, Texas. Upper right hand view shows a battery of kilns with line of Carrier conveying brick to cars on track. Lower views show loading end of Carrier in kiln and unloading end of same line in car. This company says: "We can load as many brick with six men as we did with ten men with wheelbarrows."

Send for complete illustrated catalog

Mathews Gravity Carrier Company

St. Paul, Minn., U. S. A.

British Mathews, Ltd., London, England.

Foreign Factories

Canadian Mathews Gravity Carrier Co., Ltd., Toronto, Canada.

Sales Offices

Rochester, N. Y.

New York City, N. Y.

Boston, Mass.

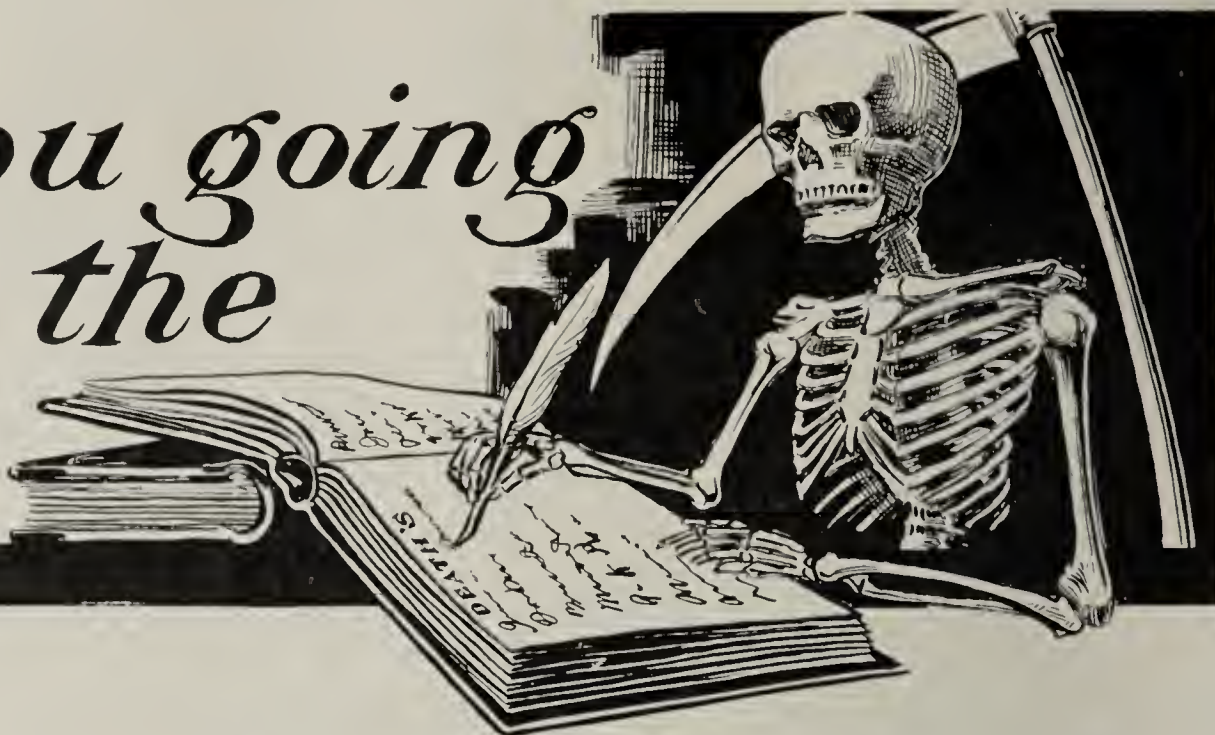
Philadelphia, Penna.

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*Are you going
to pay the
Price*



Do You Know What a Human Life Is Worth?

Without considering the question of humanity, have you ever stopped to think what the death of one of your employes, through some negligence on your part, would cost you? Before Employers' Liability Law became common, the average cost of a death to the employer was \$125.00. In recent years, however, this cost has increased, and now the average collection for damages due to negligence of employers is \$1,000 per man.

DANGER FOR YOU

If you operate a shale pit you necessarily use explosives in large quantities. Explosives are also necessary in the breaking down of clay banks. You probably use dynamite, and this in the hands of your workmen is a constant menace. There is no telling what day there will be a bit of carelessness — an accident — and you will not only have the mental suffering resulting from the loss of human life, but a big bill of cost to pay. You should be glad to find an explosive which you can turn over to your workmen with the feeling that this great danger is reduced to the minimum. There is just one explosive which will do your work properly, and yet will relieve you of this terrible responsibility of human life. That explosive is

DYNALITE

Which Has Stood the Test of 5 Years Time

One of the great dangers in handling dynamite is the necessity in cold weather for thawing it out.

DYNALITE NEEDS NO THAWING.

Dynamite and other explosives cannot be used in cold water.

DYNALITE IS NOT AFFECTED BY WATER. IT CAN BE USED UNDER ICE WATER.

Most explosives require the utmost care in handling

DYNALITE WILL STAND ALMOST ALL SORTS OF HARD TREATMENT.

DYNALITE, WHEN PROPERLY FIRED BY ELECTRIC BATTERY, OR WITH TIME FUSE, IS ONE OF THE MOST POWERFUL EXPLOSIVES ON THE MARKET, AND IS SPECIALLY SUITED FOR WORK IN CLAY AND SHALE PITS.

We can tell you some facts about the use of explosives in the clay-working industry that will interest you. Write us for information

THE AMERICAN DYNALITE CO., Business Office, ELYRIA, OHIO

Magazines: Findlay, O., Wilmington, O., and Ottawa, Ill.

PROGRESS IN BRICK PAVING

The Dunn idea is a distinct step forward in the progress of the paving brick industry. The adoption of the Dunn Wire-Cut-Lug Block will prove of vast benefit to the brick paving interests because of the better character of the paving done, higher standard set in street and roadway construction, and in the quality of the material used.

TIME FOR ACTION

A crucial moment has arrived in the paving brick industry. We cannot stand still—we must go forward, and any plan for the improvement of their product should be welcomed by the paving brick manufacturers. It is time to abandon old theories and to adopt new methods that will promote the paving brick interests.

THE DUNN WIRE-CUT-LUG BLOCK

Has been approved in 400 cities, and the seven big plants now manufacturing this block find a ready market for their product. Their block pass all tests and requirements, and they manufacture with less percentage of culls and secure a larger yardage per thousand block than is possible with the repressed block. These plants are manufacturing at less cost than before, and they are making more profit. We call your attention to the following letter from one of these manufacturers:

STERLING BRICK COMPANY

Olean, N. Y., Sept. 15, 1911

Mr. F. B. Dunn, Gen'l Mgr.,
Dunn Wire-Cut-Lug Brick Co.,
Conneaut, Ohio.

Dear Sir:—With reference to the wire-cut-lug cutter which we installed some months ago, I have been at the factory several times recently and last week made careful inquiry as to the results being obtained on your cutter.

I am pleased to report that the little difficulty we had at the start occasioned by broken wires has all disappeared and our superintendent now informs me that he is not bothered in this respect nearly as much as he was with the old style of rotary cutter. In other respects the cutter has not given trouble of any nature and in fact, has worked beautifully.

The blocks we are making with it have shown better abrasion tests than what we have ever been able to get on the repressed block and the goods we are furnishing for state and municipal work are giving the best of satisfaction.

Our kiln burner claims that these blocks stand up better in the kiln and the results which he is showing verify this.

We are much pleased with your cutter and wish you continued success.

Yours very truly,

(Signed) F. H. SNYDER,

Vice-President.

Correspondence relating to arrangements for the manufacture of Dunn Block should be addressed to

The Dunn Wire-Cut-Lug Block Co.
Conneaut, Ohio

Patented in United States and Foreign Countries.



WIRE-ROPE AND AERIAL WIRE-ROPE TRAMWAYS

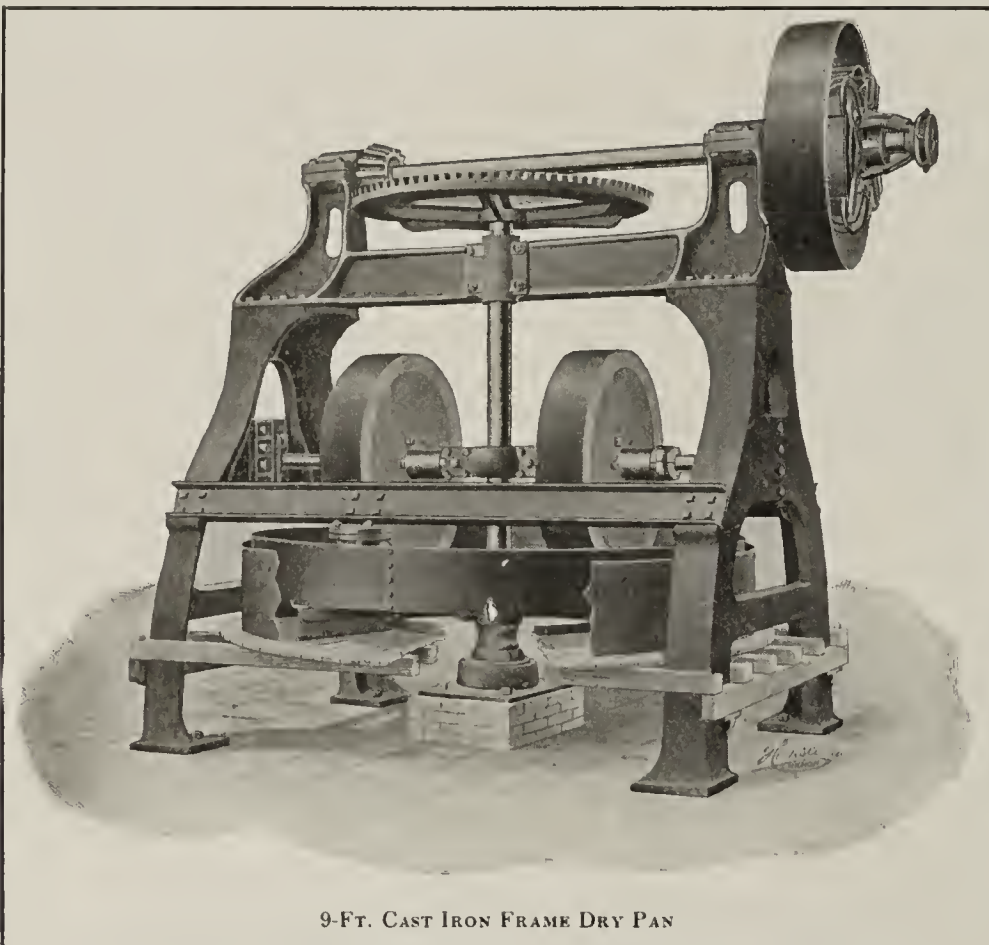
View shows a B. & B. Pat. Automatic Aerial Wire-Rope Tramway which transports 800 tons daily a distance of 1300 feet at a cost of less than 1c. per ton. This tramway is equipped with G. & S. Pat. Automatic Self-Dumping, Self-Righting and Self-Lock Buckets.

ASK FOR CATALOGUE NO. 16

BRODERICK & BASCOM ROPE CO.

St. Louis, Mo.

BRANCHES: 76 Warren St., N. Y. Seattle, Wash.



9-Ft. CAST IRON FRAME DRY PAN

THE oldest established sewer pipe machinery manufacturers in the United States

First to make a solid socket Die.

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Complete Equipment

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BRICK

and Clay Record

A Semi-Monthly Record of the World's Progress in Clayworking

(Entered as Second-Class Matter, January 2, 1911, at the Postoffice at Chicago, Ill.,
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Coloring and Decoration of Ceramic Ware

A book of practical value to all clayworkers.

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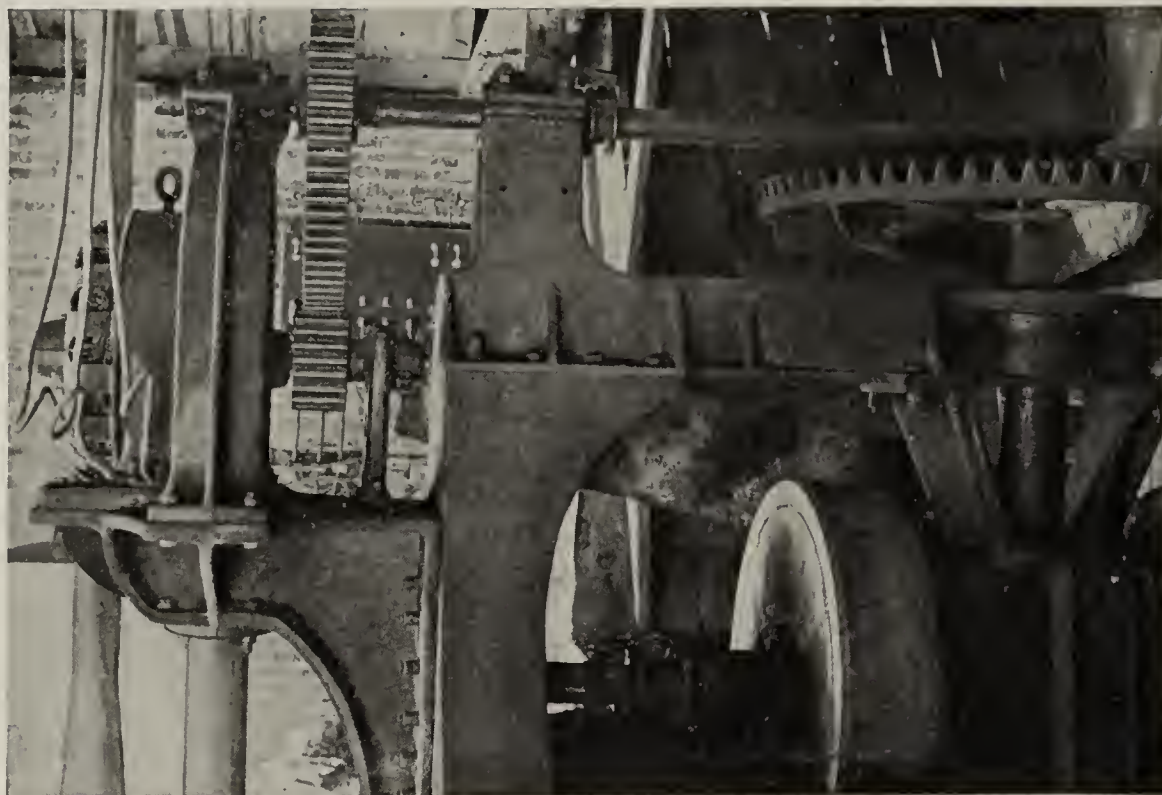
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KENFIELD-LEACH CO.
Chicago



Westinghouse Motor Driving Dry Pan

You not only make more brick, but make them of a more uniform quality, and at a less cost by driving your machines individually with

Westinghouse Motors

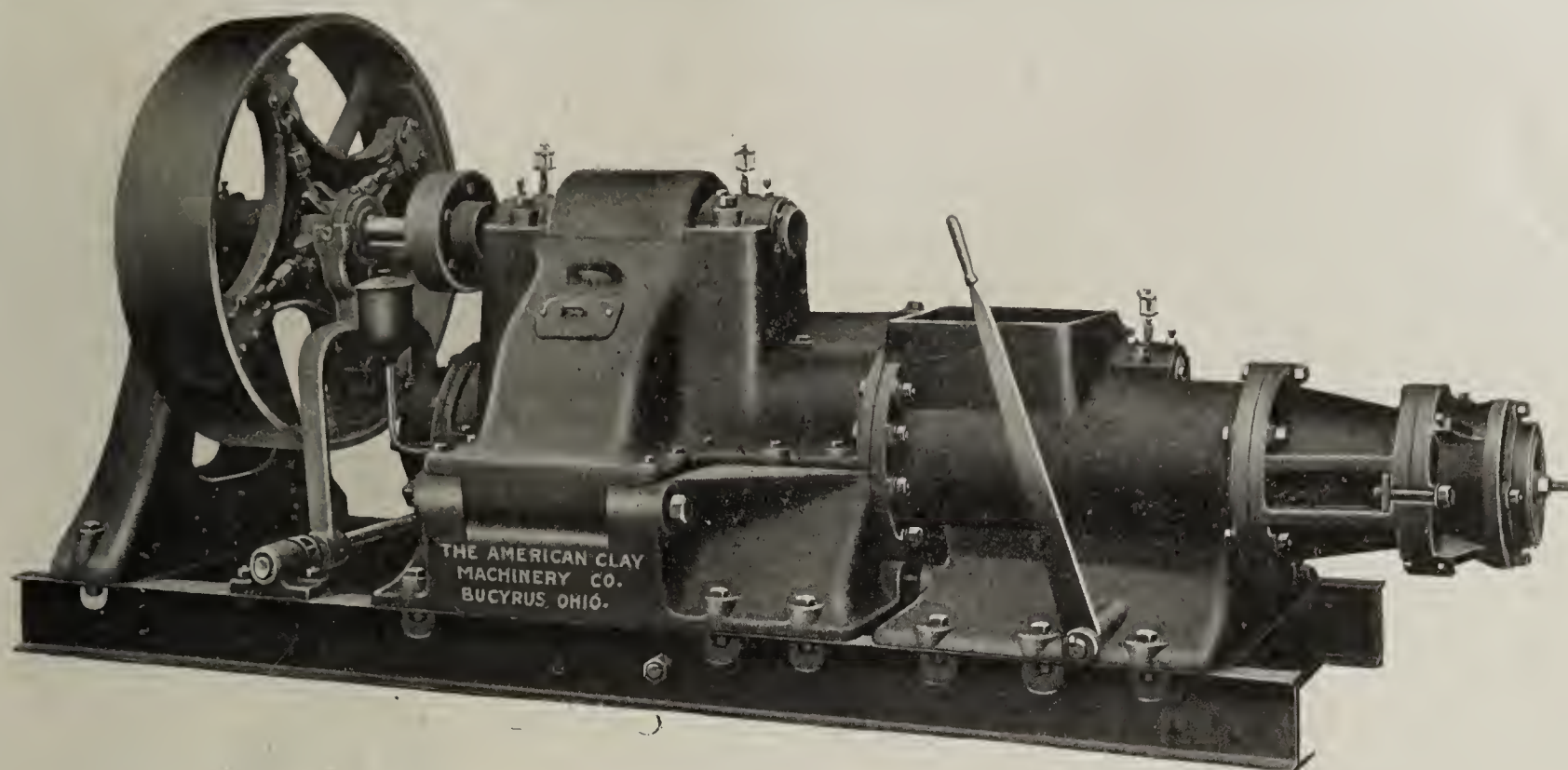
That individual-motor drive reduces manufacturing costs, as compared with line-shaft and belt drive is no longer disputed. With individual drive power is used during the actual working periods only and is used most effectively. When idle the power cost stops. Your machines are driven at the exact, sustained speed to develop their greatest capacity and turn out a product of uniform, high quality.

Our experience in successfully electrifying many brick-making plants, both large and small, has enabled us to develop a motor particularly suited to meet the severe conditions of this class of service.

We can refer you to many brick-making plants where Westinghouse motor-driven machinery is in operation, and where you can convince yourself as to the undoubted superior economy and efficiency of individual-motor drive. A request to our nearest office will receive immediate attention.

Westinghouse Electric & Manufacturing Co.

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Baltimore, Md.	Charlotte, N. C.	Indianapolis, Ind.	Milwaukee, Wls.	Portland, Oregon	Spokane, Wash.
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Westinghouse Electric & Manufacturing Co. of Texas, Dallas, El Paso and Houston, Texas.					
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LOOK AT THE FIGURES

Let the figures talk!

If we can sell you a machine that will make you 50,000 4-inch tile in 8 hours and do it easily and smoothly the year round without any repairs, wouldn't that machine be worth more to you than a machine at any price which would groan under a capacity of 30,000 tile or less in ten hours, and have to be rebuilt every year or two?

When we make you 20,000 more tile a day

When we save you two hours operating time and expense each day

When we save you big repair bills each year

When we cut your power in half

Why wouldn't our machine be well worth a whole lot more to you?

That is what quality in machinery means.

As a matter of fact our machines cost you little, if any more at the start and are a great deal cheaper in the long run.

Our No. 218 tile machine has a capacity limited only to the ability of your force to take care of the tile.

In it friction losses have been reduced to a minimum and careful tests in actual service have demonstrated that it will deliver a given capacity at a remarkable saving in horse power over any other machine.

We have just sold four of the No. 218 Tile Machines to the largest manufacturers of drain tile in the West. After using other machines for years they promptly discarded them and welcomed the new No. 218 as ideal, after thoroughly investigating its merits.

If you want capacity and quality, both quality of product and quality of machine, we can give it to you in the No. 218.

Let us hear from you concerning your needs, as we can furnish the **Best** for the Clay Worker in every branch of the clay trade.

We build every machine and appliance for the manufacture of clay products by all processes. Write today, it means dollars saved.

The American Clay Machinery Co.

Bucyrus, Ohio, U. S. A.

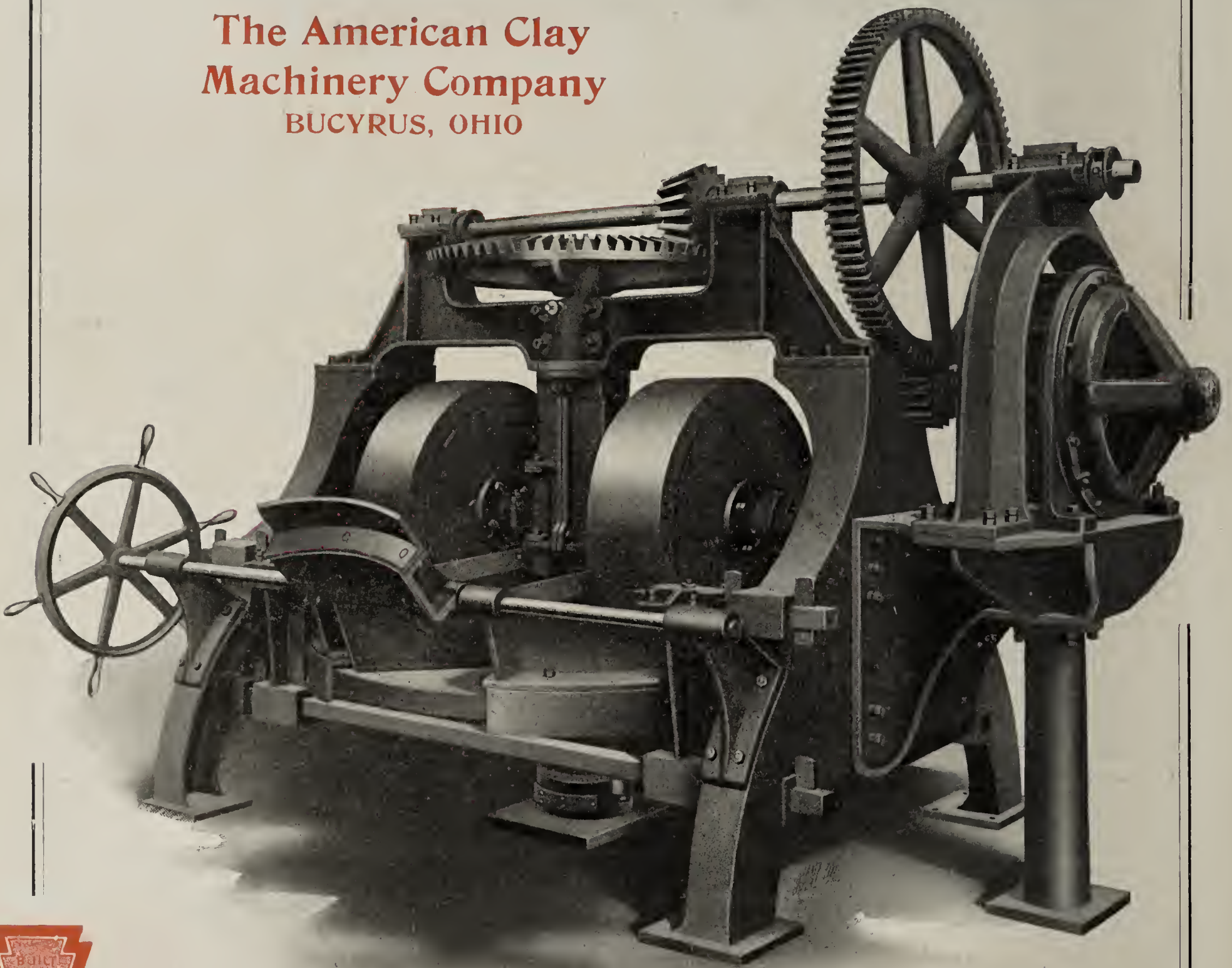


Unloading Device For Wet Pans

The illustration shows our six-foot wet pan with patent unloading device. The rim of the pan is composed of a strong cast-iron stationary rim held in place by being securely bolted to the tie bars of pan. This rim is made in sections for convenience in handling, and is also provided with an independent angle wearing rim proper. This rim has an opening or gate in one side to allow the ground material to pass out from the pan onto a conveyor or elevator. Attached to the legs of the pan are two bearings which support a shaft. This shaft is also supported by two additional bearings, which form part of the stationary rim. These last two bearings are located on each side of the openings in the rim. On this shaft is mounted and securely keyed a combined gate and scraper. At the outer end of the shaft is a hand wheel, as shown. When the material has been ground or mixed sufficiently to suit requirements the operator turns the wheel, which opens the gate and at the same time lowers the scraper, which scrapes the clay out of the pan onto the conveyor or elevator. After the pan is empty the wheel is again turned, which removes the scraper and closes the gate. On this shaft is also a notched wheel, and a pall so arranged that the scraper can be held in the pan or the gate be held closed and locked.

We build every machine and appliance needed by the Clay Worker.

**The American Clay
Machinery Company**
BUCYRUS, OHIO

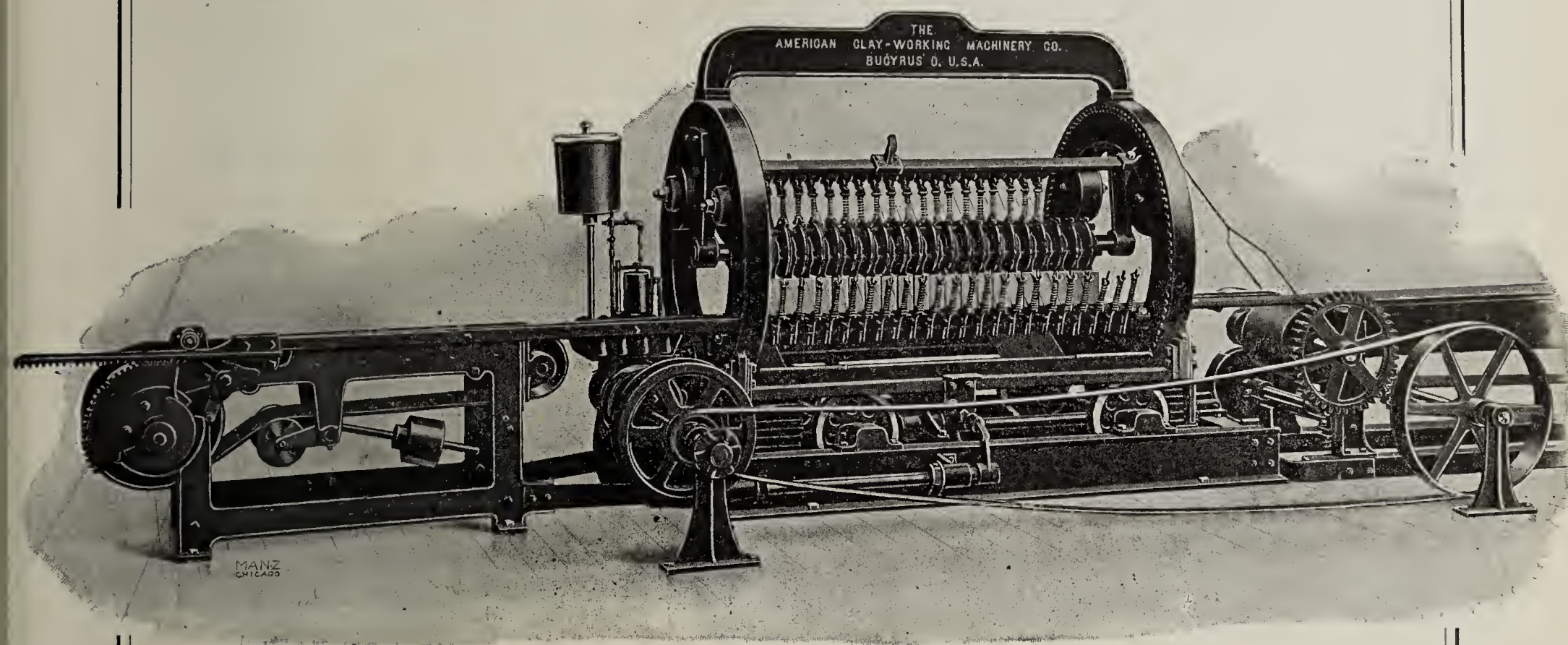


Much the Largest Manufacturers of Clay Working Machinery in the World.

Automatic Cutter

The accompanying cut shows our No. 20 Automatic Cutter, which is one of half a dozen styles of automatic cutters we build. This cutter is simple, durable, accurate and rapid. It is compact, occupying the minimum of space, and overcomes the swelling and buckling of the bar of clay.

The rotary wire frame is driven by two large pinions in the center of the machine. These pinions are driven by a worm gear and worm, which gives a steady motion to the wire reel. The worm, or driving shaft, is set at right angles with the cutter and is driven with a friction clutch pulley. This friction clutch pulley is operated by the movement of the carriage which starts the wire reel in motion, and it is thrown out of gear by the rotating wire reel.



There are two sets of improved toggle wire fasteners, which permit more time for the wires to pass through the column of clay and leave them at rest in a horizontal position, which is the most advantageous position in replacing broken wires. This can be done without stopping the machine. The wires have a shearing action when passing through the bar of clay, making as perfect a cut as can be made with a wire-cut machine.

The wires are prevented from cutting the bar of clay before the proper time by means of a simple band brake and brake wheel. The carriage is kept in register with the moving bar of clay by a most simple register device. There is rotating motion to all its parts, so that any wearing of these parts does not affect the accuracy of their operation. The platens can be changed for cutting different thickness in a few minutes. The wire reel is carried on six track wheels, which are provided with eccentric pins to take up the wear. The cutter is built high-grade throughout. We also build other automatic cutters as well as every machine and appliance needed in every branch of the clay trade.

The American Clay Machinery Co.

Bucyrus, Ohio, U. S. A.



Much the Largest Manufacturers of Clay Working Machinery in the World.

Ideal Dryer Low Cost No Upkeep

Too much care cannot be taken in laying out and constructing your Dryer. That is why we maintain an engineering department competent to successfully carry out this work. It is no more expensive to be right, in fact, it eliminates a great deal of operation trouble and expense. Our engineering department will look over your plant and give you the proper layout. Our factory will deliver you an equipment for the dryer which is faultless in material and manufacturing. With these attributes of success your dryer trouble will be eliminated.

The American Patented Steam Pipe Rack Dryer is designed by specialists in this class of dryers. It is constructed of the very best material in a thoroughly workmanlike manner, under the direct supervision of the best Engineering and Manufacturing Departments in the clayworking field.

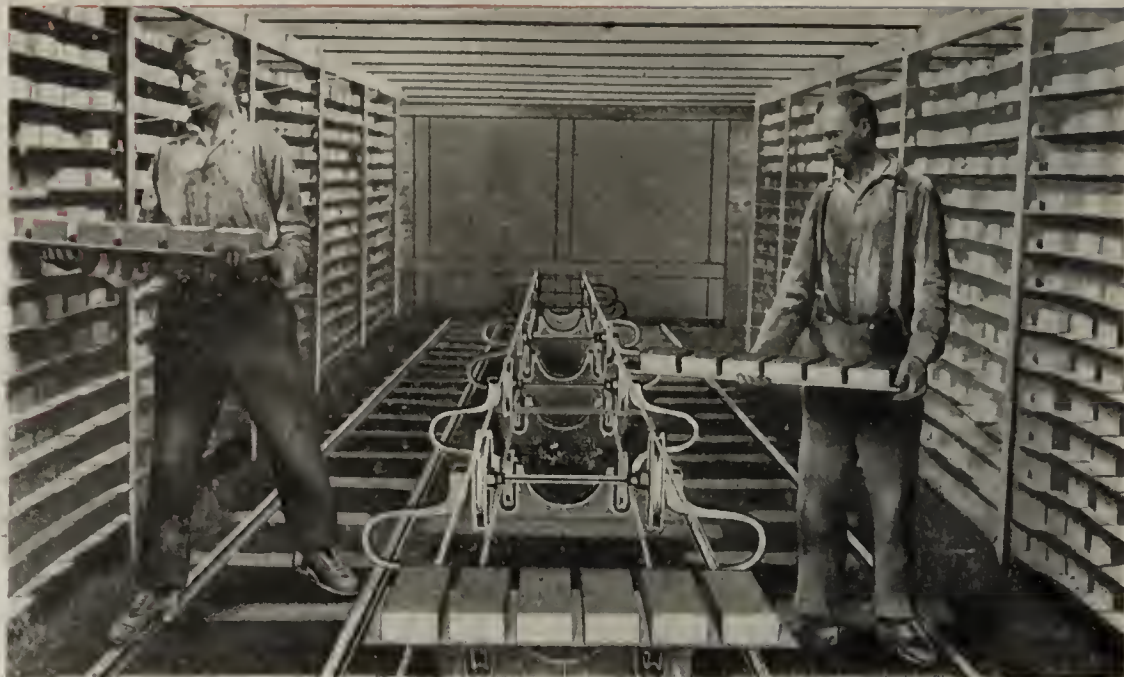
It is the **ideal dryer** with **no cost of maintenance** and the **lowest possible cost of operation**.

The Cable Delivery System **Saves Labor, Protects the Product and Economizes Space.**

We own and control the vital patents which make the Steam Pipe Rack Dryer a success and will protect with a surety bond any user of the American Steam Pipe Rack Dryer who has fears of interference.

We have just received a number of additional patents on this dryer which place it still further in advance of others. We will be glad to correspond with you relative to this or any other Dryer. We build every type of dryer and are prejudiced in favor of none. Your clay and its drying properties govern us in recommending a dryer.

We build every machine and appliance needed for the production of every class of Clay Products by any process.



The American Clay Machinery Co.

Bucyrus, Ohio, U. S. A.



Grinding Mills for Sand Lime Brick

For the manufacture of Sand Lime Brick, Wet and Dry Grinding Mills do much to improve the quality of the brick and thus popularize this type of brick and extend its market.

Our special style F, 9 ft. wet and dry grinding mill which we have developed for use in the sand lime brick trade is made in two sizes, 8 ft. and 9 ft., which designates the diameter of the grinding pan. Where more than one mill is required, to obtain the desired capacity, the mills can be furnished either in a duplex setting, where both are joined together, or in single independent settings.

Many features in the construction of these mills are the direct outgrowth of our long experience in grinding silica sands, crushed rock, and similar substances, and more particularly in mixing and grinding sand and lime in their preparation for the manufacture of sand lime brick. The use of these mills enables the manufacturer to combine the several operations of moistening, mixing and grinding, into one, thus greatly simplifying and improving the method of sand lime brick making. The mills possess the further advantage of so grinding the sand that it is given the sharp and gritty consistency which is essential in obtaining a perfect bond between the sand and lime, and this is necessary to secure a high grade product. The abrasive action of the mullers by virtue of which the sand is broken up into sharp angular particles instead of a fine and granular powder, explains the high efficiency of the machine.

By the use of these wet and dry grinding mills the highest quality of brick yet made in the United States has been produced, and factories throughout the country are being re-built and re-arranged so that the advantages of these special machines may be utilized.

More than twenty of these machines have already been installed in sand lime brick plants throughout the United States and have in each case proven more than satisfactory.

We build every machine and appliance required for the manufacture of Sand-Lime Brick.

**The American Clay
Machinery Company**

WILLOUGHBY, OHIO



Brick Classified Department

A BARGAIN COUNTER of

For Sale and Want Advertising

"Brick and Clay Record" Ads are Result Producers. Cash must accompany all orders.

One half inch (15 to 25 words) \$1.00 per insertion.

One inch (30 to 50 words) \$2.00 per insertion.

\$2.00 per insertion for each additional inch.

Opportunities to Purchase or Lease Clayworking Plants Cheap

For Sale

Dry pressed brick plant machinery for sale very reasonable. Also bands for round, down-draft kilns. Greenville Lumber Co., Greenville, Ill. 12-2TF.

For Sale.

One 3-kiln tile plant in Ohio. Everything new and most modernly equipped. Good clay and excellent market. Bad health reason for selling. Address 8-R. B. C., care of "Brick." 8-1

Roofing Tile.

Here is an opportunity for the roofing tile business wherein over one-half the cost of construction and equipment of a first-class plant is saved. Also an abundance of suitable clays from which a superior quality of tile are now being made. This is a fine opportunity. Investigate it. Address A. H. Murray, Cloverport, Ky. 12-2

For Sale.

Good brick plant, Henry Martin Machinery, boiler and engine; 13¾ acres land, on sidetrack. On account of the death of Manager we will sell this property at a bargain. Princeton Brick Co. Princeton, Ky. 11-2-3P

For Sale or Trade.

Splendid chance to get into tile business. Former owner just died. Ample sheds, good boiler and engine, two kilns, tile machines, several cars coal, ten acres land, unexcelled for tile. Price, \$3,000; would consider half trade. Excellent local demand for tile. E. W. Armstrong, Monroeville, O. 12-2-P

For Sale, Lease or Management.

A modern brick plant, fully equipped, with inexhaustible deposits of shale and fire clay, plenty of coal to burn the product; making paving brick and front brick; favorable inducements to buy a controlling interest or all on easy terms, or to lease for a term of years, or to manage with cash investment. A good chance to the right man. Owners have other business requiring all their time and attention. Address Herbert, care "Brick and Clay Record." 11-2-3

Brick Plant For Sale

Owing to ill health of manager, a practically new plant, having down-draft kilns, brick and steel buildings, located near Pittsburgh, Pa. Plant now in operation. Plenty of shale and fire clay for the manufacture of facing brick, common red brick or block. Capacity 25,000 per day. Do not overlook this opportunity. Address 323 Second Avenue, Tarentum, Pa. 12-2-1

Kentucky Fire Clay Lands.

Will sell or lease on favorable terms, or join with other parties in building a plant in eastern Kentucky. Good opening for people wishing to engage in this business or enlarge their present holdings. A good proposition for shipping crude clay for fire brick and glass pots; best quality; economical mining conditions; good shipping facilities; large and profitable market. Address: Kentucky, care "Brick and Clay Record." 12-2-1

For Sale or Trade.

Brick and tile factory in good, live town; good market. Five round down-draft kilns, good dry sheds, five acres of clay land, situated on two railroads; good machinery; been in operation for over 25 years. Best of reasons for selling; will bear investigation, and if you want a bargain, we have it. For further particulars address: Zales S. McGinnis, Aledo, Ill. 12-TF

Receiver's Sale.

Brick and Tile Factory, Portland, Ore.

Sealed bids will be received until January 15, 1912, for the purchase of a strictly up-to-date factory for the manufacture of a first-class building brick, drain tile and partition tile. Failure of owners due to lack of sufficient working capital. Market unexcelled, including this city and the entire State of Oregon, Southern and Eastern Washington. Plant located in the vicinity of Portland. The right is reserved to reject any or all bids. Write to the undersigned for full particulars as to location of plant, prices received for products, extent of market and data regarding construction of plant.

Henry Bldg.,
Portland, Ore.

J. M. Ambrose,
Receiver.
12-1

For Sale.

A 2-kiln brick and tile plant in Eastern Iowa. Address, DeWitt Brick & Tile Co., DeWitt, Iowa. 11-2-5-P

For Sale.

One 5-kiln brick and tile plant, in good running order; plenty of clay and good market. Owners have other business. For full description address T. W. Ward, 1006 E. Fifth St., Aledo, Ill. 12-2-1-P

For Sale

At sacrifice price if taken soon, our modern, well equipped brick and tile plant located in east central Iowa. Martin & Younkin, New Sharon, Iowa. 12-2TF.

Tile Plant for Sale.

Best location in Iowa for selling tile; town of 4,000; best of clay 18 ft. deep. Plant of good capacity and well equipped. Good reasons for selling. Address 11-2D, care of "Brick and Clay Record." 11-2-TF

To Paving Brickmakers.

The undersigned has an abundant supply of shale suitable for paving brick which it desires to have utilized.

This shale has been analyzed and tested and it is believed there is nothing superior to it for the purpose indicated. It is located about eight miles east of the Terminal Railway, East St. Louis. It is of easy access, on the line of a well equipped railroad by which the raw material, or the manufactured product, can be brought to East St. Louis. Address St. Louis & O'Fallon Coal Co., East St. Louis, Ill. 12-6-P

Opportunity.

A splendid opportunity for the right man with \$5,000 to \$10,000 to invest, and understands the clay business. Can get a liberal stock bonus in new clay business, with an abundance of good clay and a fine opening for drain tile, hollow tile, building block, fireproofing and pottery.

For further information address the American Clay Products Manufacturing Co. Stillwater, Minn., Wm. Smithson, Secretary. 10-2-TF

CLASSIFIED DEPARTMENT

SPECIAL OPPORTUNITIES

Tile and Pottery Plant.

We offer attractive proposition in six kiln tile plant. Hamilton Chamber of Commerce, Hamilton, Ohio. 11-2-3

Wanted—

Working Partner in Brick Plant.

One who can purchase an interest and practically competent to take charge, at a good salary, in a stiff-mud and dry-press plant with machinery capacity of 20,000 per day, but handicapped by reason of limited kiln capacity. At present burning exclusively fire brick and have refused more orders this year than have been filled. Purchase money to be invested in increase of plant and output. Will entertain sale of entire plant, but would much prefer a desirable associate. The plant is exceptionally well located in the very center of the industrial district of Los Angeles city. References required and given. Address 12-C, care of "Brick and Clay Record." 12-2

A Man With Some Money

to invest in the brick business can secure a good opportunity, with or without position. If a position is desired one can be secured either as superintendent, manager, salesman, or corporate officer.

Several companies and individuals desire experienced, capable and trustworthy men, who are able and willing to invest money and become actively identified in the further development of established plants in different localities, making paving brick, fire brick and building brick.

Inducements are offered in undeveloped properties, carrying rich deposits of fire clay analyzing approximately 46 per cent silica, 39 per cent alumina; the best in the United States for brick, for lining lime and cement kilns, coke ovens and furnaces. This property is well and favorably located for western and southern business. Parties having capital to invest and who are experienced and capable of filling positions of responsibility in such an undertaking will receive every encouragement in establishing such an enterprise.

Manufacturers contemplating the erection of new plants or enlargement of old ones, or seeking new locations are especially desired.

Splendid opportunity also for the manufacture of hollowware, glazed pottery, crockery, enamel brick and sanitary ware, and almost any line of shale or fire clay products.

Unlimited supply of best raw materials at low cost. Cheap coal and plenty of gas at reasonable rates. Close to best markets and good railroad accommodations.

If this appeals to you and you can meet the requirements write at once.

Address Industrial Agent, care "Brick and Clay Record." 12-2-1

Factory or Business Wanted.

I am looking for a good opening for cash. Correspondence confidential; give full particulars. Address Brick, Box 4980, Cherry Valley, Ill. 11-2-5

MACHINERY WANTED

Wanted

75 second-hand flat top iron cars, 20-inch gauge. Reply to Atlantic Terra Cotta Co., 1170 Broadway, N. Y. C. 12-2-2

Wanted

80 to 100 dryer cars, 24 or 26 in. gauge, double deck, 34 to 36 in. wide. Must be in good condition. Write, giving full particulars, with price. Also 3,000 ft. 12-lb. T rail. Address Cecil Camp, Texas City, Ill. 12-2-1-P.

HELP WANTED

Wanted.

First-class shaper on red pressed brick. Good wages and steady employment to right party. Fredonia Brick Co., Fredonia, Kansas. 11-2-4

Wanted

As assistant to superintendent on a southern plant, an intelligent, industrious and strictly sober young man ambitious to fully learn the brick business. One who has worked with producer gas fired continuous kilns is preferred. State experience, age, references and salary expected to begin with. Address 12-2D, care of "Brick and Clay Record." 12-2-1-P

Superintendent Wanted.

A good position open for a capable and reliable brickyard superintendent of stiff-mud plant, making paving blocks and face brick of both fire clay and shale; a man who can become financially interested preferred, but capability and reliability are first qualifications that will be considered. Send recommendations, references and full information. Address 11-2 E. B., care "Brick and Clay Record." 11-2-3

Partner Desired and Position Open For a Manager or Superintendent.

Of fire brick works, hand process, making first-class quality of fire brick for coke ovens and furnaces. A man desired who can buy an interest and assume greater part of management. Owners have other business requiring most of their time and will dispose of part of their stock at favorable prices and on easy terms to a good party, well recommended, who can give the business competent, personal attention. State age, experience, habits, how much money you can invest within a year, and send recommendations and references. Address: Fire Brick, care "Brick and Clay Record." 12-2-1

Wanted

Feb. 1st, 1912, young man, to run Freese Union Machine and automatic cutter. Give experience, age and wages expected. Chance for advancement. Address Fresno Brick & Tile Co., P. O. Box 816, Fresno, Calif. 12-2-1

Wanted

A good shop foreman: man understanding stiff-mud and dry-press processes, also having knowledge of sewer-pipe manufacturing. Good wages and steady position. None but hustlers need apply. Address 12-2F, care of "Brick and Clay Record." 12-2-1

Wanted.

A sales agent who knows how to sell brick; capable of taking charge of an office. Salary and percentage basis. Give references with application. Address: 12-2-C, care "Brick and Clay Record." 12-2-2-P

Northwestern Opportunity.

I want a thrifty and practical brick-maker, experienced in hollow ware and continuous kilns, to invest \$8,000, and take full management of most promising small yard on Puget Sound. Excellent opening for energetic man of small means to get start for himself and family, with great future. H. W. Davis, Jr., Secy., 1724 Arch Ave., Seattle, Wash. 12-2-2-P

Ceramic Graduates Wanted.

A paving brick company wishes to secure the services of several men who are graduates of ceramic schools, and who have ambition to learn the business, starting at the bottom, with prospect of rapid advancement as they prove their worth and ability to take on greater responsibility. Good opportunity offers for right men. Address 12-M, care of "Brick and Clay Record." 12-3

POSITIONS WANTED

Wanted

Position as superintendent or manager, one skilled in every detail of brick manufacture. The best of reference given. Address 12-2E, care of "Brick and Clay Record." 12-2-1

Position Wanted.

Superintendent at present in charge of a large paving and face brick company desires a change and would like to connect with some large, progressive concern that will appreciate the services of a "live wire" as manager or superintendent. Only those needing the services of a high-grade man need answer. Would invest small amount as a guarantee of good faith. Gilt edged references. Address 12-2A, care "Brick and Clay Record." 12-2-1

In drying clay wares we have had the largest and most varied experience of any one in America.

Our dryers get results

We manufacture complete, everything needed for dryer installations.

When the best is required, consult us. We are clay works engineers.

Trautwein

SYSTEM
OF
WASTE HEAT
DRYING

**TRAUTWEIN DRYER
and
ENGINEERING CO.**

**417 SO. DEARBORN ST.
CHICAGO**

Superintendent Seeks Change.

First-class capabilities, accustomed to the brick, tile and terra cotta trade in all its branches; 30 years in the business; absolutely detailed in any process; accustomed to large outputs; good organizer; commercial abilities; references. Apply 12-H, "Brick and Clay Record." 12-3-P

Tile and Brick-Making Equipment Machinery and Supplies

For Sale.

Freese Mammoth machine, \$100; practically new gears. Platt Co., Van Meter, Ia. 9-2-tf

For Sale

Four-mold Fernholtz dry press in first-class condition. For particulars address W. G. Bush & Co., Nashville, Tenn. 12-2-2-P

For Sale

1—Berg 4-mold dry press.
1—Frey-Sheckler combined brick machine, No. 23.
1—American No. 25 automatic cutter.
2—Raymond 9 ft. pugmills.
1—Bevel gear winding drum.
3—Wood side dump clay cars.
1—No. 777 Raymond auger machine.
3—Victor represses.
2—Piano wire screens.
Address The Fort Scott Brick & Tile Co., Fort Scott, Kan. 12-2TF.

For Sale—Machinery.

We offer special prices for a limited time on one Victor repress, steam silica press, single die hand repress. Address: Box 8-A, care of "Brick and Clay Record." 8tf

For Sale.

Martin "A" soft-mud brick machine, compound disintegrator and crusher, elevator, pug-mill, mold sander, trucks, shafting, pulleys, etc. All new in 1908. 30,000 pallets and racks for same. Bargain to quick buyer. Address, Barton T. Fell, Trenton, N. J. 11-2-TF

For Sale—Machinery.

For sale cheap, 20 rack cars, 12 pallets high, 24-in. gauge for 34-in. pallets; two-way dump cars, two-yard capacity, 36-in. gauge with brake; and one two-way dump car, one and one-half yard capacity, 36-in. gauge. Address: 8-B, care of "Brick and Clay Record." 8tf

Brick Machinery for Sale.

190-ft. section Jeffrey No. 110 chain pan conveyor, two 7-ft. and one 9-ft. Penfield dry pans, Penfield No. 20-A plunger brick machine, Penfield sewer-pipe press, Raymond Columbia steam repress, 13 Carnell hand represses, 237 double 6 deck brick cars (33 in. gauge) for Sharer dryer, 7 transfer cars; 4 turn tables, portable tractor, 100 lights Colt's acetylene gas machine, two 80 h. p. Fitchburg boilers, pulleys, shafting, etc. The Powhatan Clay Mfg. Co., Richmond, Va. 11-2-4

For Sale.

A complete outfit of machinery for the manufacture of sand-line brick; in good condition. Address 12-2-B, care of "Brick and Clay Record." 12-2-2

For Sale.

Soft mud brick machine, Hercules Sr., capacity 25,000 to 40,000; mould sander, turn table, shafts, pulleys and boxings; 20M. wood pallets, one Pulsometer steam pump, one Potts distintegrator. All in A1 condition. W. E. Lyon & Co., Carthage, Ill. 8-2-TF

For Sale.

New Centennial brick and hollow ware machine, Madden & Co. hollow ware and brick machine, transfer cars, hollow tile cutting table, hollow block or conduit cutting table, semi-automatic cutting table, 11 ft. off-bearing table, 10 ft. pug mill, 9 ft. dry pan, clay elevator, 115 double deck dryer cars, mine friction hoist, wagon scales, 3,000 ft. 12-lb. tee rail. Full equipment shafting, hangers, pulleys, belting, mine cars, etc. Must be moved at once, regardless of price. Brazil Wrecking Co., Brazil, Ind. 11-TF

For Sale.

23,000 second-hand pine pallets, excellent condition, full 32x14. Six selected laths, heavy pine cleats. Highest bidder takes them. Also "Monarch" brick machine, with molds and attachments, good as new, cheap. N. L. Glover, Windom, Minn. 12-2-1

CLASSIFIED DEPARTMENT

Steam Engines

Corliss and automatic engines, all sizes. Throttling engines—horizontal and vertical. Boilers—tubular, portable and water tube. Belting—leather, rubber and canvas. Address: Cleveland Belting & Machinery Co., 160 Scranton Rd., Cleveland, O. 4-2-TF

For Sale

1—25 h.p. Columbus gasoline engine.
1—60 h.p. Columbus gasoline engine.
1—66 in. x 32 ft. Cumer self-contained dryer, with automatic stoker.
All in good condition, used six months only. Address Hydraulic Press Brick Co., Central National Bank Building, St. Louis, Mo. 12-2-12

WOOD, IRON AND STEEL

SHAFTS-PULLEYS-HANGERS

Belting, Packing, Lacing

Lombard Iron Works, Augusta, Ga.

Patents

Inventions Protected
Trade Marks
Registered
Patents Investigated

Established 1895.

HUBERT E. PECK, Patent Attorney
635 F Street, Washington, D. C.

Sole Importers in the United States of

PRECIPITATED

Carbonate **G&S** of Barytes

The only preventive for scum and discoloration on facing brick and terra cotta; neutralizing the sulphate of lime in the clay and water. Orders Filled from Stock Without Delay.

Red Slip Clay.

Circulars and Particulars on Application.

GABRIEL & SCHALL,
P. O. Box 1712 205 Pearl St., N. Y.

ADAM JACK

Brick Builder and Contractor

PRACTICAL KILN and FURNACE BUILDER

Hoffman Continuous Kilns, Square Kilns, Round Salt Glaze Kilns, Round Down Draft Dome Kilns, Muffle Kilns for Enamel and Pottery.

Steel Smelting Furnaces, Blast Furnaces, Tempering, Heating and Puddling Furnaces and Coke Ovens, Clay Examined, Tested and Burned in Test Kilns on Proposed Sites. Repairs and Alterations have my Personal Supervision. Get my Prices. Distance no Obstacle. Apply

CLAYBURN, B. C. CANADA

For Sale.

1—18x36 Bates Corliss engine.
1—12x16 balanced slide valve engine with 5 $\frac{3}{8}$ x9-ft. 7-in. shaft for running 6x12 hot air fan.
1—8x10 balanced slide valve engine.
1—11x22 engine and geared hoist.
All above engines are in good shape and can be seen in operation at our plant until first of January. Reason for sale, we are changing to electric drive. Address Boone Brick, Tile & Paving Co., Boone, Iowa. 12-1

For Sale

25 Western 2-way side dump cars, 1 $\frac{1}{4}$ yards capacity, 24-inch gauge; fine condition.

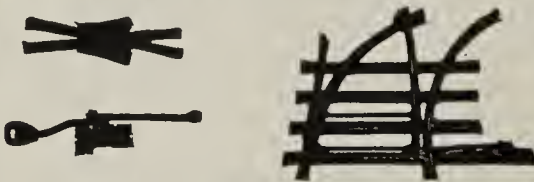
GEORGE D. SMITH,
814 Fisher Bldg., Chicago.

Steel Rails

All sections New and Relaying.
In stock for immediate shipment.
Second-hand rails cut to any length desired for all purposes.
M. K. Frank, Pittsburg, Pa.

FROGS, SWITCHES, CROSSINGS

Stands and Portable Track for all weights of rail for Quarries, Brick and Tile Yards, Industrial Plants and Contractors' use.



Catalogue and prices upon request

THE INDIANAPOLIS SWITCH & FROG CO.
SPRINGFIELD, OHIO

New York Office, 29 Broadway J. A. FOULKS, Rep.
Chicago Office, 1528-1529 McCormick Bldg., J. C. JAMESON, Rep.

REBUILT BOILERS AND ENGINES.

Engines—Corliss.

18x42 Lane & Bodley, 18x36 Ohio heavy duty, 16x42 Allis, 14x36 Sioux City, 12x30 Lane & Bodley, 12x30 Hamilton.

Engines—Automatic.

14 $\frac{1}{4}$ x24 Buckeye, 11x16x12 Buffalo Compound, 13 $\frac{1}{2}$ x15 Taylor, 13x16 Atlas, 13x12 Harrisburg-Ideal, 13x12 Phoenix, 12x14 Green, 12x12 Armington & Sims, 11x16 Atlas, 8x14 Noyes.

Engines—Throttling.

18x24 Atlas, 14x18 Sinker-Davis, 14x14 Lewis vertical, 12x16 Reed, 12x14 Brownell, 10x16 Bass, 10x12 Atlas, 9x13 Lane & Bodley, 8x10 Erie, 6x8 Industrial.

Boilers—Stationary.

72x18, 66x16 high pressure, 72x18 standard, 72x16, 66x18, 60x16, 60x14, 54x14, 48x14, 44x14, 44x12, 42x12, 36x12, etc.

Boilers—Fire Box.

100, 80, 60, 50, 40, 35, 30, 25, 20, 16, 12, 10 and 8 h. p., etc.

Boilers—Vertical.

50, 40, 35, 30, 25, 20, 16, 12, 10, 8, 5 and 3 h. p., etc.

Heaters.

All sizes open and closed.

Pumps.

All sizes, single and duplex.

Electrical.

30 k. w. generator, direct connected to 8x10 Skinner engine; 20 k. w. generator, direct connected to 8x10 Economic engine; 18 k. w. belted generator.

Miscellaneous.

Saw mills, lath mills, edgers, cutoff saws, resaws, blowers, exhaust fans, tanks, etc.

Write for list. Also full assortment of new machinery.

Sole manufacturers of the celebrated "Leader" Injectors and Jet Pumps. Send for circular.

THE RANDLE MACHINERY CO.,
1735 Powers St., Cincinnati, Ohio.

12-tf





DO YOU
WANT

An Employee?
A Position?
To Buy Anything?

HAVE YOU
FOR SALE

Used Machinery?
Land, Plant or
Anything Else?

"Brick and Clay Record"
Advertisements Bring Returns

	<h2>Boss System of Burning Brick</h2> <p>THE ORIGINAL PRINCIPLE OF APPLYING AIR UNDER PRESSURE TO BRICK KILNS</p> <p>Will cut your fuel bill half in two No expense for maintenance Less labor in burning Will burn all hard, uniform brick from top to bottom <i>Write for catalog.</i></p> <p>John C. Boss Company Elkhart, Indiana MONGER BUILDING (Infringers will be Prosecuted)</p>	
<p>DRYING and BURNING</p>		<p>DRYING and BURNING</p>
		

THE RICHARDSON-LOVEJOY ENGINEERING COMPANY

COLUMBUS, OHIO

CERAMIC ENGINEERS
FACTORY ARCHITECTS

GEOLOGICAL EXAMINATION OF PROPERTIES
CLAY TESTING

INVESTIGATIONS OF MANUFACTURING PROPOSITIONS
PLANTS DESIGNED, CONSTRUCTION SUPERINTENDED
AND OPERATIONS DIRECTED
DRIERS, FURNACES, KILNS

REMODELING OLD PLANTS GIVEN SPECIAL ATTENTION
DEVELOPMENT OF NEW LINES OF PRODUCTS

Pamphlet, "Ceramic Engineering." Free

THE SWIFT KILN REQUIRES NO FIRE BRICK EXCEPT IN FURNACES

No Grates Whatever :: Solid Bottom

Only slack coal used from start to finish.
If your burning is not satisfactory let me have
your inquiry. I can furnish you plans where
you can change your kilns at small cost and
will guarantee results.

EDWARD A. SWIFT, OTTAWA, ILL.

We Will Sell Your Brick

We offer you a 120-Page Book, which gives the whole plan of a Moderate Cost Campaign of advertising "That Will Sell Clay Products." It is printed on good paper and substantially bound. In order that the book need not be mutilated we also send a duplicate set of proofs of each page which can be sent to the printer as copy.

SELLING TALKS THAT SELL

Most brick manufacturers know the arguments in favor of brick construction but few know how to put these arguments into black and white—to present them in a concise, "straight from the shoulder" manner that will be convincing to the reader. The brick advertising talks are arranged in a consecutive series of arguments, bringing out one by one, in order, the various merits and advantages and economies of brick construction for residences, factories and business buildings. One of the best illustrators of the country has made illustrations to accompany each of these talks, which express in effective manner the thoughts brought out in the advertisement. Printing plates for these illustrations are furnished, if desired.

There are also ads for selling other clay products. The entire copyrighted series of Ads and Selling Talks will be sent to you, substantially bound in book form, for only Five Dollars.

HOW TO GET FREE ADVERTISING

Along with this series of advertisements we furnish you another series of reading articles dwelling in detail upon the beauty, economy, permanence and advantages of brick construction, and we will show you how you can get these articles printed free of charge in the newspapers. These reading articles are furnished without extra charge to you, being a part of this big book. It's a good time right now to start your selling campaign.

Clay Products Advertising Co.

Care of "BRICK AND CLAY RECORD," 445 Plymouth Ct., Chicago

*For
Feeders & Screens
-write-
The Ceramic Supply & Construction Co.
Columbus, Ohio*

PERFORATED METAL SCREENS

As required for
BRICK
MAKERS
USES.



Manufactured
by

NEW YORK OFFICE
Room 1017 Cortlandt Building

HENDRICK MFG. CO.
CARBONDALE, PA.

HAIGH'S IMPROVED NEW SYSTEM OF CONTINUOUS KILN

ARRANGED TO SUIT ALL LOCATIONS

These Kilns can be seen burning Roofing Tile, Drain Tile, Dry Pressed Facing, Fire, Paving and Common Building Brick and burning from 5,000 to over 200,000 brick per day

Address H. HAIGH, BRICKWORKS ENGINEER, CATSKILL, N. Y.

Why Not Use Oil, The Progressive Clay Worker's Fuel?

The Clay Worker sometimes hesitates to adopt oil as a fuel for burning his wares, because he fears a change of fuel will cause a loss, his burners not being familiar with handling an oil *fire*. Write us for our plan of burning. We will burn the first kiln or two which obviates this trouble and oftentimes produces a better ware than formerly burned by your present system. Our customers say of us "You know how."

TATE-JONES & CO., Inc., Pittsburg, Pa.

Manufacturers of Oil Burning Equipment

Chicago Representative, 518 Fisher Building

JNO. J. CONE
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ROBERT W. HUNT & CO.

Bureau of Inspection, Tests and Consultation

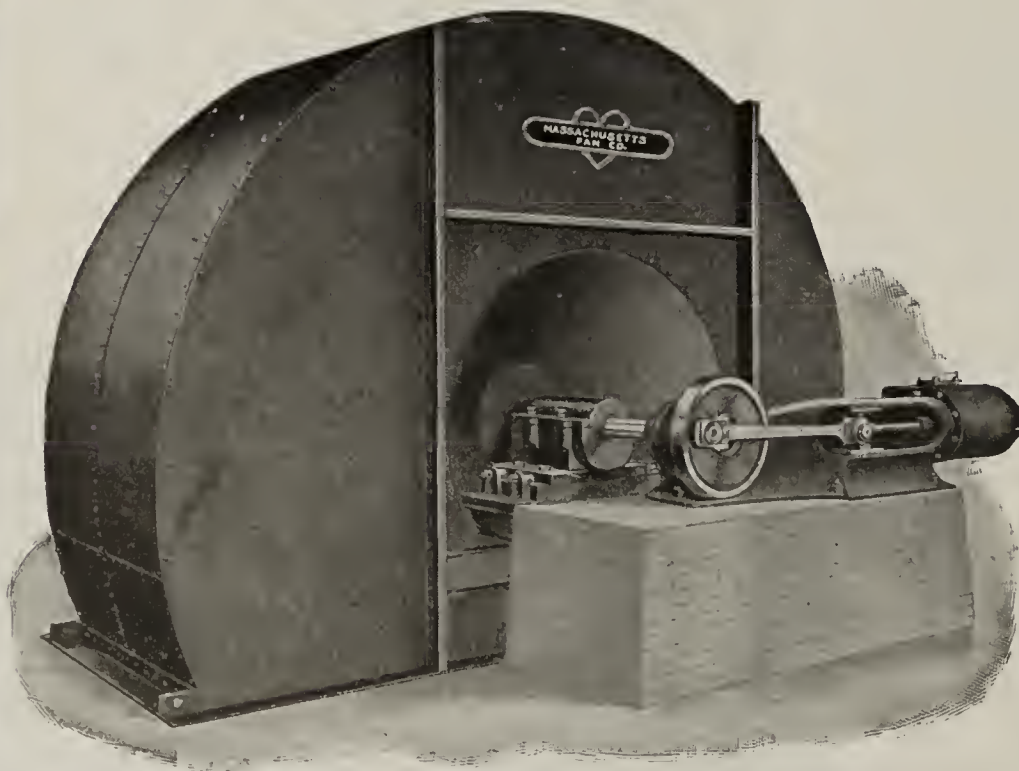
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NEW YORK CHICAGO PITTSBURGH

Inspector of brick and other clay products, rails and fastenings, cars, locomotives, pipe, etc., bridges, buildings and other structures. Analysis of clay, cement, etc. Reports and estimates on properties and processes.



All persons are NOTIFIED against INFRINGEMENT
FISKE & COMPANY, Inc., Boston New York

MASSACHUSETTS FANS FOR CLAY WORKING PLANTS



STANDARD TYPE OF WASTE HEAT FAN.

A PRACTICAL knowledge of every day conditions is necessary when building

Waste Heat Dryers

Each clay presents a special problem. It requires more than a good fan man to solve it. It takes a combination of a fan and clay man. We have just such a man. Can't he help you?

Massachusetts Fan Co.

WATERTOWN, MASS.

Cleveland Office: Rockefeller Building

2-38

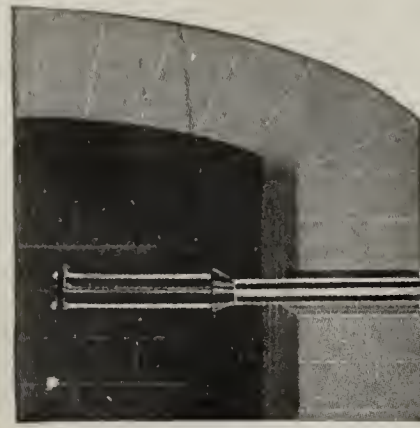


The Port Credit Brick Co's. Plant, Port Credit, Ont.
Using WELLER Improved Oil Burners.

WELLER-Made Improved OIL BURNERS

are rapidly superseding other types for use in brick and clay plants because of their absolute simplicity. They permit close adjustment of flame, regulation of oil supply, and a uniform steam pressure. Write for special booklet—and for the new complete WELLER catalog.

Weller Mfg. Co. Chicago



PYROMETERS

Stationary, portable and
recording Pyrometers to
1200
and
3000
degrees

THE BROWN INSTRUMENT CO.
311 Walnut Street Philadelphia, Pa.

Absolute Control of Temperatures in All Kinds of Kilns and Furnaces

Heraeus Le Chatelier

PYROMETER

Recommended by the highest authorities

For measuring temperature between 0 and 1600 deg. Celsius, equal to 2930 deg. Fahrenheit. Successfully used in establishments for the manufacture of Brick, Pressed Brick, Terra Cotta, Pottery, Porcelain, Stoneware, Chamotte, Cement, Glass, Iron and Steel and other metals, particularly for Hardening and Annealing, also for Molten Metals, Cartridges and Ammunition, Chemicals, Gas, Accumulators; and by Boiler Inspectors, School and Colleges.

Heraeus Patented Electrical Furnaces

For Laboratory and Experimental Use.

Fused Silica Ware of Every Description at Moderate Prices

Heraeus Patented Fused Quartz Glass Articles

of every description. This Heraeus Patented Fused Quartz Glass is not affected by any changes of temperature, whatsoever, and the co-efficient of expansion is only 1/17 that of platinum. It is of the utmost importance for all purposes where the above qualities are essential. Write for information. Pamphlets and References on Application

CHARLES ENGELHARD, Hudson Terminal Bldgs.
30 Cortlandt St., NEW YORK CITY

My New Method of Operating

CONTINUOUS KILNS

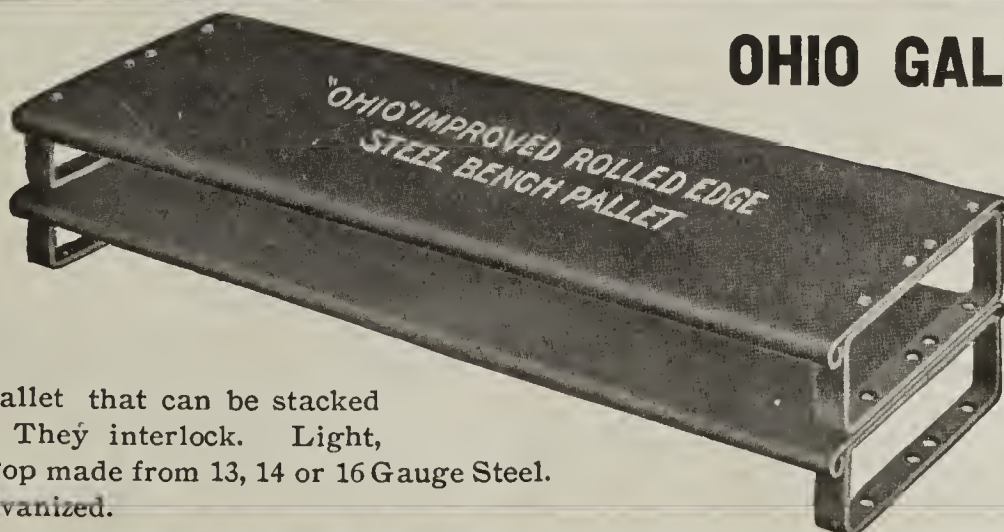
Has surpassed all others. Superiority in economy and in quality of products burned. Suitable for all grades of clay products. Cheapest in construction. Easiest to understand, and most agreeable to operate.

Others can build a continuous kiln, **BUT I CAN BOTH:—BUILD IT, and RUN IT,** and I can prove it.

RICHARD B. HOEHNE

Civil and Ceramic Engineer

BUCYRUS, OHIO



**OHIO GALVANIZING
& MFG. CO.**

NILES, OHIO

Style No. 4

(Patented)

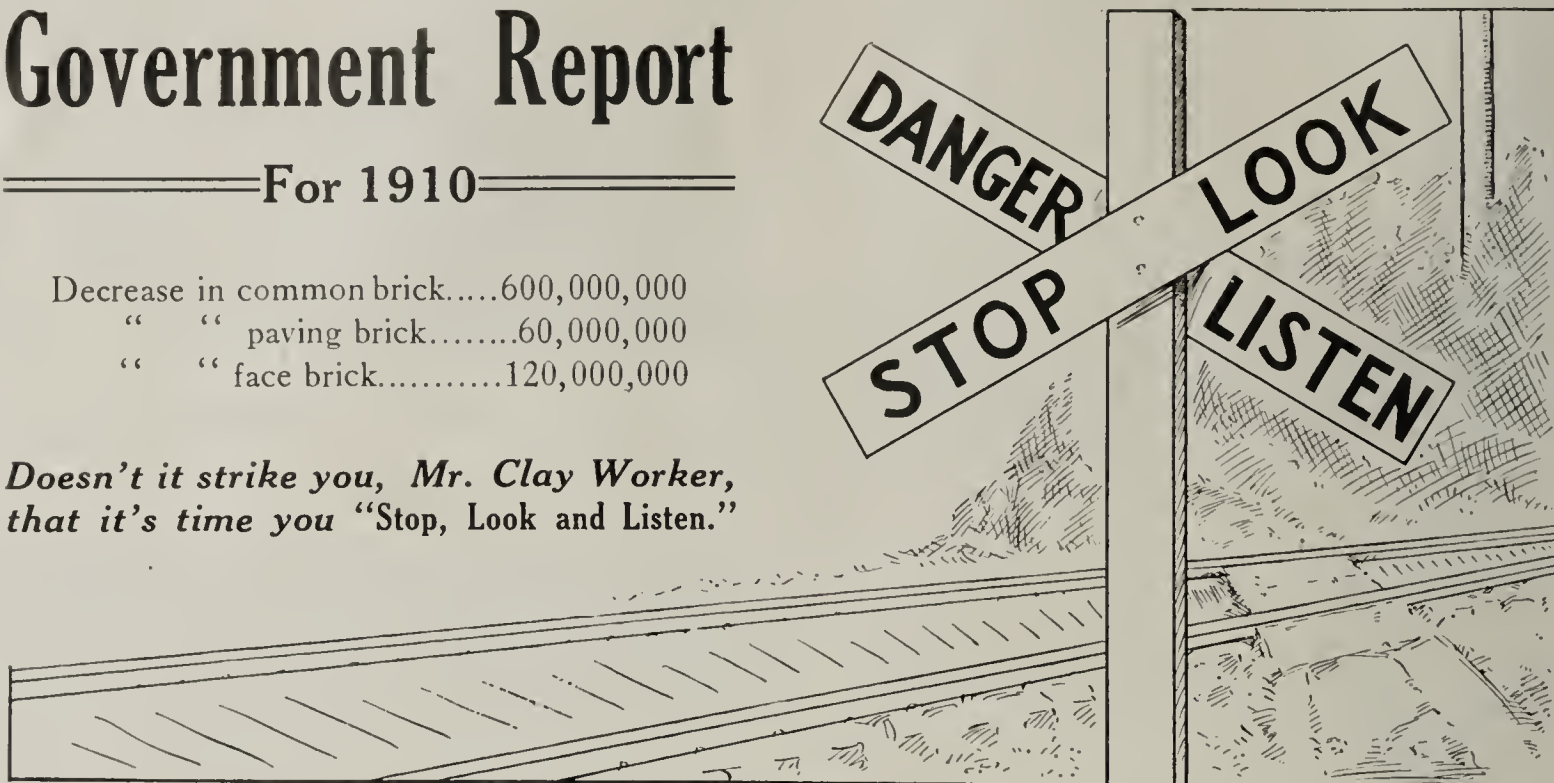
The only Steel Bench Pallet that can be stacked without slipping. They interlock. Light, strong and rigid. Top made from 13, 14 or 16 Gauge Steel. Either Black or Galvanized.

Government Report

For 1910

Decrease in common brick.....600,000,000
 " " paving brick.....60,000,000
 " " face brick.....120,000,000

*Doesn't it strike you, Mr. Clay Worker,
 that it's time you "Stop, Look and Listen."*



Doesn't it strike you that there is "Danger" ahead for the Clay Trade unless you take steps immediately to place Clay Products fairly and forcefully before the public? Don't excuse yourself with the thought that it was an off year and that other branches of the building industry were dull. The same report will show you that the cement industry showed an increase of 18 per cent in 1910 with a 17 per cent increase in 1909. Don't this show WHY the output of Brick decreased?

The opportunity for you to start for a better showing in 1912 is right at hand.

That opportunity is the Clay Products Exposition, and it is vital to your own personal business interests. It will bring you business, and will place the entire Clay Industry on the upward path.

Don't forget the "Danger" signal.

Boost Your Sales

1912 should be a banner year in the clay industry. You can help to make it so if you do your share toward promoting the greatest enterprise which was ever undertaken for the benefit of the clay industry. Of course, an enterprise intended to further the interests of the clay products industry should have your support anyway, regardless of all sentiment, and simply as a matter of business, and as

A Practical Plan

which should appeal to live business men. The coming Clay Products Show offers a means for promoting your sales which it would be foolish for you to neglect, if you sell, or desire to sell, in the Great Middle West Territory. Your exhibit at this show would reach the eyes of thousands of those whom you wish to interest. If you do not sell directly in this territory, the practical value of the show to you is fully as great, because of the

National Publicity

which will be given to the displays shown. A regular publicity bureau has been organized by the management, and thousands of dollars are being expended for advertising. The result of this is that people from all parts of the country will, for the next few months, read many articles concerning the superiority of clay products, and the wonders and beauties of the great exhibition at the Coliseum. Architects and contractors from all over the country will visit the show and will see the displays of brick and other clay products which the manufacturers will there exhibit.

You Cannot Afford to Stay Out

It is to your interest to have a creditable display at the great exposition, of your products. It is a matter which you should not delay. Write now to the secretary and reserve suitable floor space. DO NOT DELAY. IT TAKES TIME TO PLAN AN EXHIBIT AND TO MAKE ARRANGEMENTS THEREFOR. THE SECRETARY WILL BE GLAD TO HELP YOU. ADDRESS:

International Clay Products Exposition Co.

815 Chamber of Commerce Building - - - - CHICAGO, ILLINOIS

SAVE the COST of this man

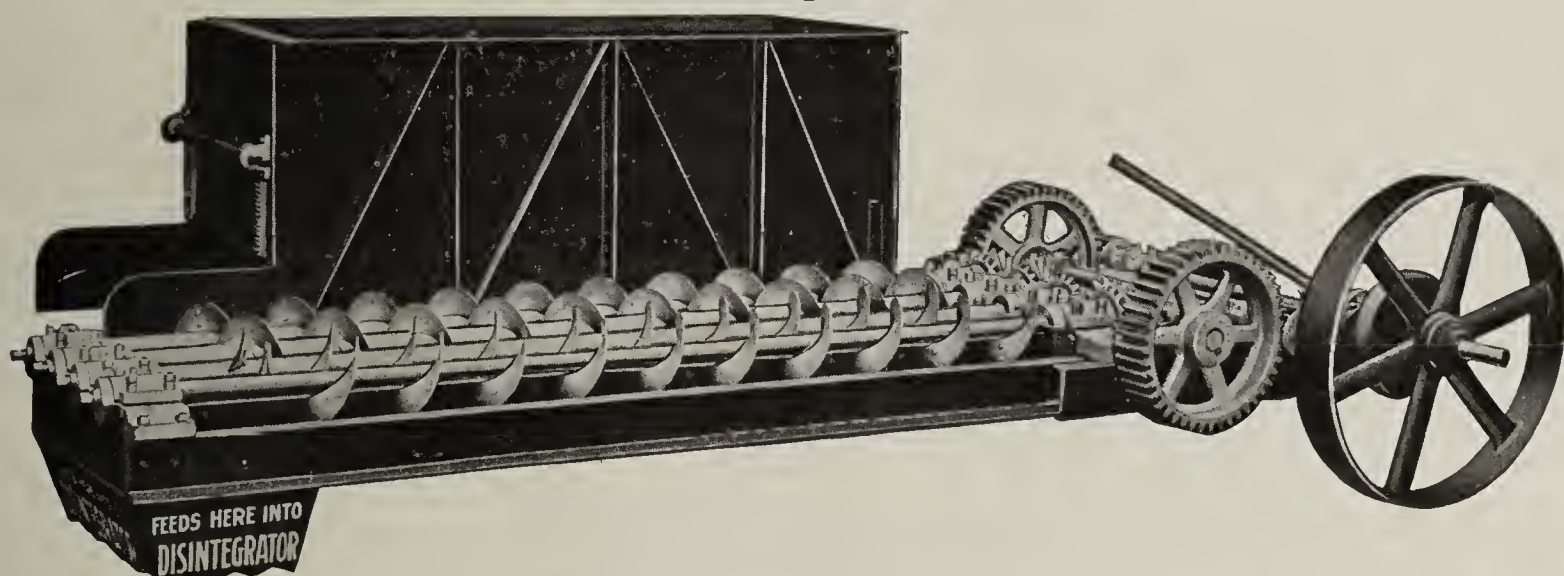


The labor of a man to shovel clay into the disintegrator costs you at least \$500 per year. On some plants the cost of getting the clay to the disintegrator is more than that.

Wouldn't you be foolish to continue paying out this \$500 needlessly every year if you could get a machine to do the same work and save its cost the first year?

A few years ago the brick and tile manufacturers did not know they needed this machine—now hundreds of concerns throughout the country are using the

Rust Clay Feeder



One clay man says: "When you first tried to sell me a Rust clay feeder I laughed at you, and said that it was entirely unnecessary. Now I wouldn't be without it. It is a necessity."

Why You Need This Feeder

- Because it will reduce your payroll \$500 per year or more.
- Because it will mix your clay better, and thus improve the quality of your brick or tile.
- Because it feeds the clay evenly and prevents clogging of the disintegrator.
- Because it keeps the whole plant running so smoothly that you can increase your capacity.
- Because it prevents the breakages resulting from clogging of the disintegrator, which cause big repair bills.
- Because it prevents expensive stoppages and annoying delays.

Get Ready for Next Season

Don't delay in your plans for getting your plant into shape for the next season. Don't Fail to include a RUST Clay Feeder, it will be the best investment you can make. DON'T DELAY if you want prompt delivery. Write us for figures and for information.

Also write for catalog telling all about the Marion line of cutters—various styles for all purposes.

If you install our flue blower now, it will save you much trouble and annoyance next summer, when you are trying to get out that rush order.

Marion Machine Foundry & Supply Company

P. O. Box 395
MARION, IND.

CHICAGO RETORT & FIRE BRICK CO.

195 CLARK STREET

Phone Randolph 3601

CHICAGO, ILL.

USE

AJAX FIRE BRICK

for your

Kilns, and Boilers

Write for Prices and Copy of Catalogue

BRICK MAKERS

Many of the largest users in your line, after costly competitive tests and experiments, are now specifying—

Evens & Howard Fire Brick

BECAUSE OF

QUALITY, PRICE AND SERVICE

We will be pleased to furnish complete information and quote prices on request.

EVENS & HOWARD FIRE BRICK COMPANY
SAINT LOUIS

Established 1856

HENRY MAURER & SON

Manufacturers of

High Grade Fire Brick

Our "Henry Maurer" No. 1 quality Fire Brick is recognized throughout the country as a standard article. We make all shapes and sizes for kiln-work and all other requirements. Catalogues on application. We solicit your inquiries.

Office: 420 East 23rd St., New York, N. Y.

Works: Maurer, N. J. (On L. V. R. R. and C. R. R., N. J.)
Philadelphia Office: Pennsylvania Building

The Department of Clayworking and Ceramics.

Established by the Legislature in 1902 at the New Jersey State College, Rutgers College, New Brunswick, N. J.

Two courses have been provided: The regular course of four years; a short course of two years designed for the young man who has had practical experience in clayworking.

C. W. PARMELEE, B. Sc.
Director.

W. H. S. DEMAREST, D. D.
President.

FIRE BRICK

DOVER FIRE BRICK CO.

Incorporated 1870

— MANUFACTURERS OF —

Dover and Buckeye Fire Brick

Unexcelled for Kiln Purposes

509 Cuyahoga Bldg.

Cleveland, Ohio

The INTEREST of the Vitrified Brick Manufacturer is with the taxpayer and property owner—and street user.

BUILD **BRICK STREETS** Exactly as WE SAY

Your demands are then met. Reasonable in first cost. Lowest in cost of maintenance. Greatest in satisfaction to the user. Most Sanitary.

Send for "IDEAL CONDITION," "THE PERMANENT ROADWAY," "PROPER CONSTRUCTION OF BRICK STREETS." SENT FREE.

WILL P. BLAIR, Secretary

National Paving Brick Mfrs. Association

Locomotive Engineers Building,
Cleveland, O.

The Danville Brick Company

Manufacturers of

The Unsurpassed Danville Paving Block

DANVILLE, ILL.

LET US QUOTE YOU PRICES

Terre Haute Vitrified Brick Co.

MANUFACTURERS OF

High Grade Vitrified PAVERS

Samples Free

Address TERRE HAUTE VITRIFIED BRICK CO.
Arcade Building, Terre Haute, Ind.

THE PURINGTON PAVING BRICK CO.

GALESBURG, ILLINOIS

Manufacturers of

Repressed Paving Brick and Blocks

SHAWMUT VITRIFIED PAVING BRICK WORKS

SHAWMUT, PA.

Alfred Yates, Gen. Mgr.

Vitrified Shale and Fire Clay

Paving Bricks and Blocks

Burned in Yates' Patent Kiln

SAMPLES AND PRICES ON APPLICATION

ONLY OUR SHALE

Highly Vitrified by Natural Gas, makes

KUSHEQUA

OXBLOOD RED FRONT BRICKS

Repressed, Bevel-edged and Devonshires.

PAVERS AND PAVING BLOCK

Combining Toughness and Beauty.

KUSHEQUA BRICK CO.,

Kushequa, Pa.

Murphysboro Paving Brick Co.

Manufacturers of

THE CELEBRATED EGYPTIAN PAVING BLOCK

THE BLOCK THAT STANDS THE TEST

Prices and samples furnished upon application

MURPHYSBORO,

ILLINOIS

Fight Fire With Fire

The surest way to stop the cement tile craze is to let the farmers know the truth.

No farmer will use cement tile after he has read that convincing booklet, "The Life of Portland Cement."

A few dollars expended to distribute this little book among the tile buyers in your territory may mean thousands of dollars in sales for you that otherwise would go to the cement tile men.

Other tile manufacturers have found it of great advantage to give this book a liberal distribution; and the results of educating the farmers to the exact truth regarding the unsuitability of cement for the making of drain tile have been most beneficial to their interests.

"The Life of Portland Cement" contains the facts regarding the fallibility of cement as used for the manufacture of tile, and gives all the authorities on the subject and statements regarding failures of cement tile that are absolutely convincing.

The publishers have had printed a few thousand copies of this booklet for the benefit of the clay tile industry and will sell same at practically cost. The booklet contains 16 pages, illustrated with cement tile failures and is sold in quantities at a very low price. Write for sample copy *at once* before the edition is exhausted.

KENFIELD-LEACH COMPANY

Publishers of

BRICK AND CLAY RECORD

Plymouth Court, Chicago, Ill.

Modern Shovels for Progressive Clay Workers

To be a leader in the strenuous present-day competition in the brick-making industry necessitates the utilization of the most modern equipment. Progressive clay-workers fully realize this—in fact, that's what makes them progressive. It is but natural, therefore, when selecting a highly efficient shovel for digging their clay (especially for moderate outputs), that they should choose

The Marion Model 28, $\frac{5}{8}$ -Yd. Revolving

Primarily because it will do better work, more of it, and at far less cost than where common hand labor is employed. Furthermore, it has an equal working range and a larger capacity than any other shovel of a corresponding size and type.



It can be operated entirely by one man. It is powerful in construction and quick in action. Swinging in complete circles in both directions, it will dig and deliver at any point within its radius.

Regularly mounted on traction wheels, but readily fitted for operating on rails.

For larger outputs and heavier work we build bigger revolving shovels and a complete line of standard shovels with dipper capacities ranging from $\frac{3}{4}$ to 6 cubic yards.

Ask for Circulars 28, 35, 40 and 250.

The Marion Steam Shovel Co.

Desk A MARION, OHIO

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That Mine Pump---Those Drier Cars---

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Brick and Clay Record

445 Plymouth Court

- - -

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Handle Your Clay With One Man and The Thew Steam Shovel



TYPE No. 1 SHOVEL

Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The dipper is hung from a horizontally moving carriage and can be adjusted to any desired level.

Only One Operator Required.
Wire Cables used instead of Chains. Strictly First-class in Every Detail. Made in Five Sizes. Mounted on Car Wheels or Traction Wheels. : : : :

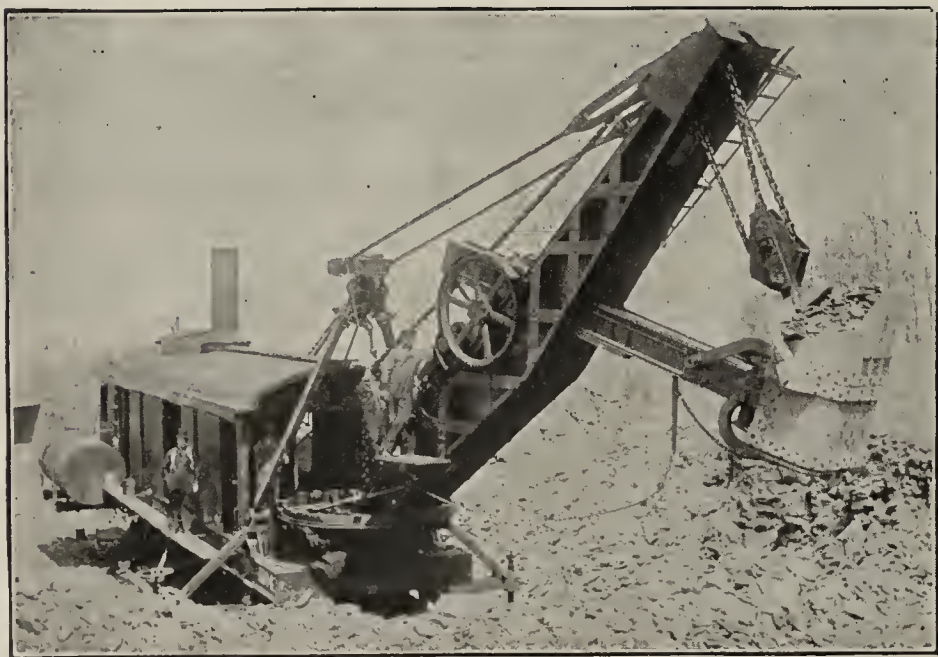
Economical for brickyards 30,000 or more daily capacity.

Operated by one man for outputs up to 125,000 bricks per day.

Write us for Catalogue and Information

The Thew Automatic Shovel Co., LORAIN, OHIO

VULCAN HEAVY-DUTY SHOVELS



Are Giants in Output—Giants in Standing Stress and Strains.

If you are looking for Perfect Service in digging Tough Clay, Solid Shale and other hard digging material, you will find it in a VULCAN Heavy-Duty.

They are especially designed for heavy work. All Gears are of Cast Steel with Cut Teeth. All Castings under heavy strain are of Open-Hearth Basic Steel. Boilers are of ample size to furnish steam to operate the shovels to their maximum capacity.

Built in all standard sizes from 45 to 120 tons, with $1\frac{1}{2}$ to 5 cubic yard dippers.

We also build the Famous Little Giant 32-ton Shovel, of which over four hundred are in use throughout the country.

Revolving shovels in three sizes, 15 to 40 tons, with $\frac{1}{2}$ to $1\frac{1}{2}$ cubic yard dippers, Special High-Boom Stripping Shovels, Locomotive Cranes and Dipper Dredges.

Write today for full information and prices.

THE VULCAN STEAM SHOVEL, CO., Toledo, O.

Eastern Office, 50 Church St., NEW YORK.

12 Distinct Advantages Possessed Only by the "American" Steam Shovel

Any One of Which Justifies the Cost of the Machine



Examine All Other Steam Shovels CAREFULLY. Then Compare the Information You Have Gathered With the Following:

1. While the "AMERICAN" is a full circle machine, IT EMPLOYS NO OUTRIGGERS OR SIDE BRACES OF ANY KIND.

2. IT'S ABSOLUTELY ONE-MAN OPERATED. The operator stands well to the front of the machine, having an unobstructed view of the dipper and work at all times.

3. All motions of the machine are accomplished by a double cylinder, NON-REVERSING ENGINE, in connection with the "AMERICAN" friction, over 10,000 of which are in daily use.

4. Two patented, special, portable, telescopic track sections are furnished regularly with the machine. These sections are easily handled by the machine, and enable it to travel quickly to any part of the pit, over short or long distances, without laying regular track. It works with equal facility, without any alteration, on standard gauge surface track.

5. Where soft condition of the ground requires, ties can be spiked to the track sections, which gives a very solid foundation to work on while digging. This also permits the machine to go safely and rapidly over soft or uneven surfaces; ABSOLUTELY NO PLANKING REQUIRED.

6. It digs deep below the rail, dumps high above the rail, and has a working radius up to 30 ft. With the substantial portable track sections, and easily ad-

justable digging arrangement, it readily makes its own face from perfectly level ground, to the required depth.

7. The digging depth and working radius are quickly changed without any alteration of machinery, at will of operator. It digs equally well in shallow stripping or in deep work. SUPPOSE YOUR PIT IS FLOODED and you cannot shift the track. The extreme digging depth of the "AMERICAN" permits you to easily reach your material, where other methods or machines would not do so.

8. THE PLUNGER AT BOOM POINT IS FOUND ONLY ON THE "AMERICAN." When handling clay or other sticky substance that fouls the bucket, the plunger quickly pushes such material through and saves much valuable time.

9. It digs with equal effectiveness at any angle to the track. It will not back away from the work in the hardest digging.

10. It does switching when Locomotive is elsewhere. It can be used as a Locomotive Crane, for handling Clam Shell or Orange Peel buckets, etc.

11. It will run up onto a flat car on its own power and can be conveyed at train speed, when desired to move from one operation to another.

12. If desired it can be worked from the top of a flat car, standing on the car on the portable track sections, and in which situation it will load cars standing upon the first or second passing tracks.

THE "AMERICAN" STEAM SHOVEL IS BRISTLING WITH MANY OTHER SPECIAL FEATURES EQUALLY AS VALUABLE AS THOSE ABOVE MENTIONED, and we will gladly tell you all there is to tell about it. ASK US.

AMERICAN HOIST & DERRICK CO., St. Paul, Minn.



Underwriters
Approved
Fire
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At Little or
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HAND CHEMICAL EXTINGUISHER
TESTED UNDER SUPERVISION OF
UNDERWRITERS' LABORATORIES, INC.
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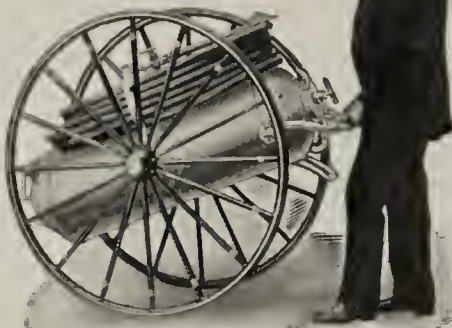
Any fire Insurance Underwriter will allow a reduction in the insurance premium on all classes of ordinary risk when the plant is properly equipped with

Approved Fire Extinguishers

This reduction in the premium is greater than the interest on the money necessary to buy Extinguishers. You therefore reduce your fixed charges and at the same time obtain *approved protection*.

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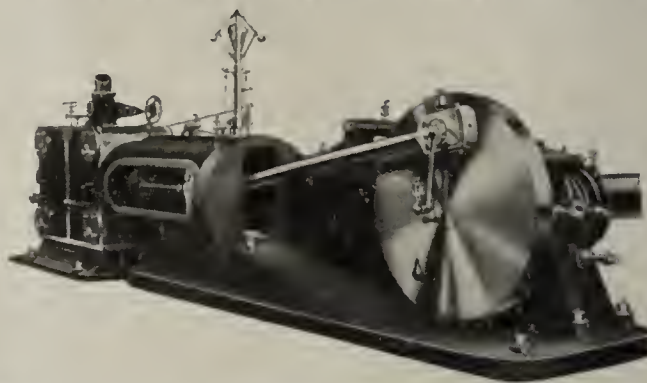
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40-Gallon Copper Tank Engine.

POWER PLANTS COMPLETE

CORLISS ENGINES, WATER-TUBE AND TUBULAR BOILERS



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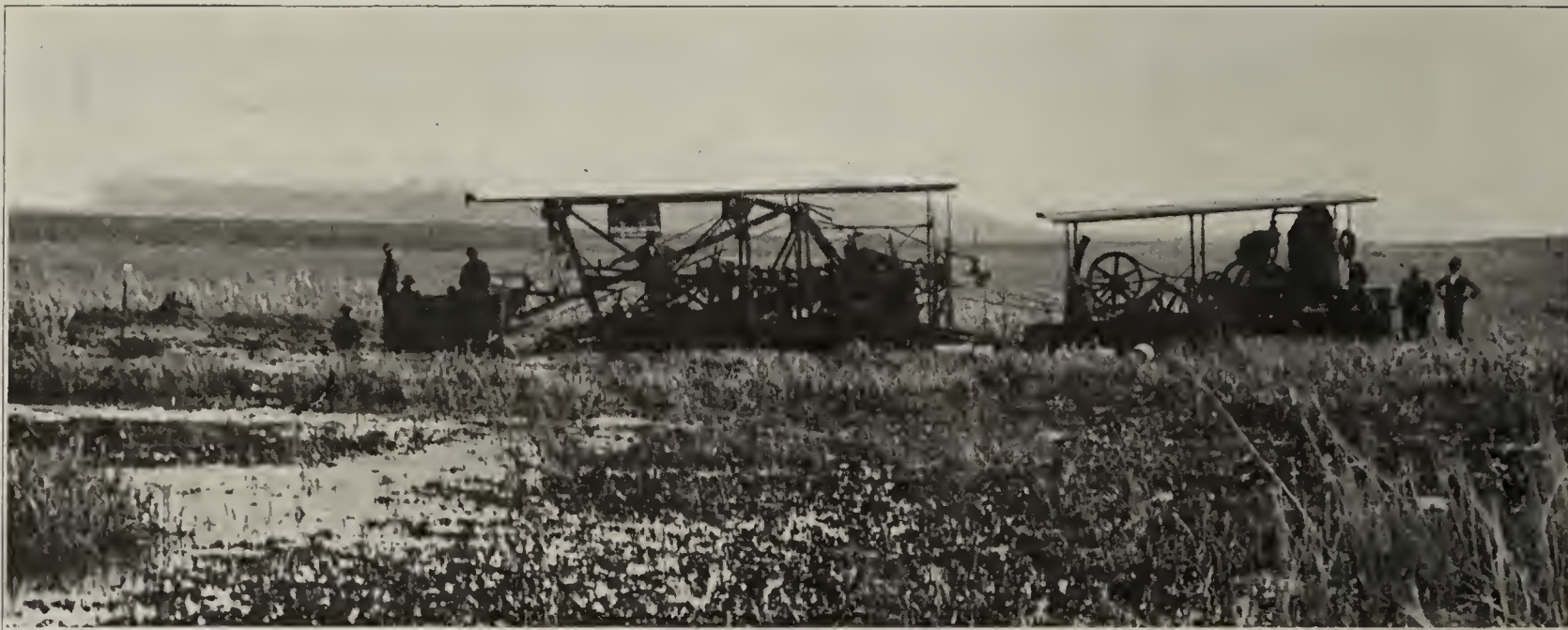
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BRICK AND TILE CUTTING WIRES

941 N. McKinley Ave., CANTON, O.



We started up the Hovland, for purchaser, upon this work, and went thru 7 sloughs in the first 3900 feet

DO YOU know of any other kind of a Ditching Machine that does or was even designed or intended to do this class of work?

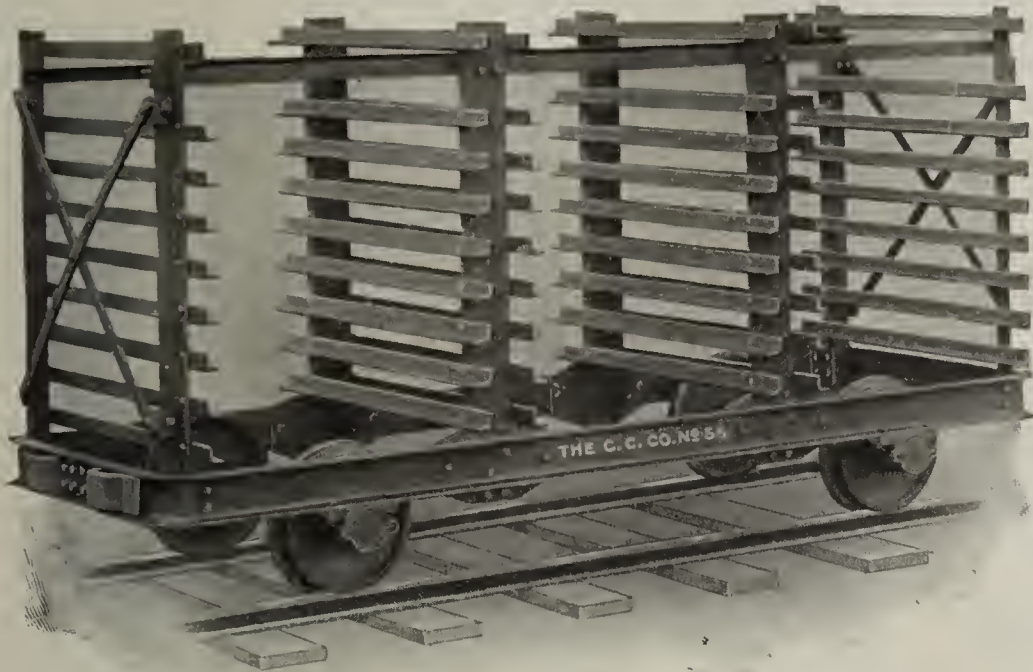
The Hovland Tile Ditcher

shows the greatest earning capacity upon work most difficult to accomplish in any other way. *Send for Catalog No. 5.*

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Successors to **St. Paul Ditcher & Carrier Co.**

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The man who buys "Industrial Cars", buys **absolute certainty**. A certainty of satisfaction is guaranteed by the makers of this line of equipment. The buyer takes no chances. **His confidence is not misplaced.**

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Car Builders and Mfgs. of Narrow Gauge Railway Equipment

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Chase Improved Flexible Bearing Folding Deck Dryer Car

See this car before placing your order.

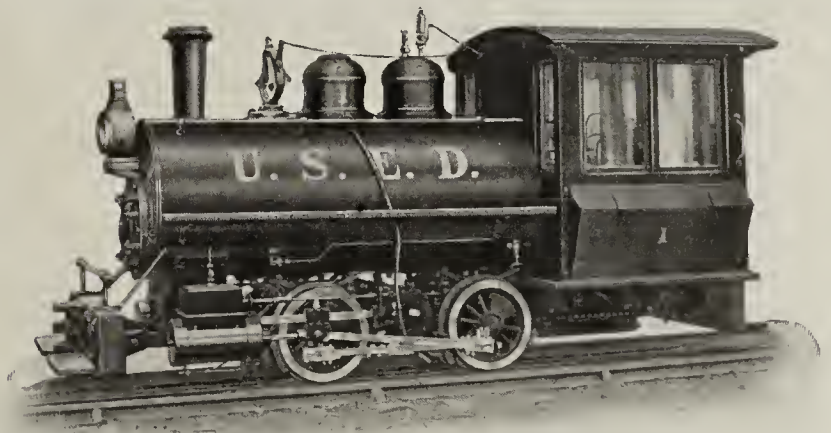
We also manufacture a full line of Side Dump, Bottom Dump and General Purpose Cars, Transfer Cars, Turntables, Switches, etc.

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Reduce costs of transportation by using a

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Small Size—Reasonable Cost—Especially built for use of clay-products manufacturers, for hauling clay or shale from pits or mine to plant.

Cheaper Than Horse Transportation

and will reduce costs of delivering your material to your plant, thus increasing profits.

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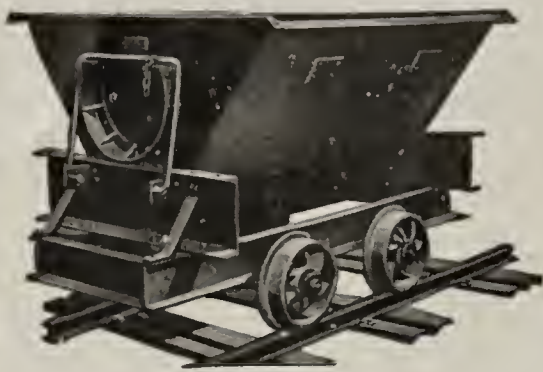
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BRANCH OFFICES: St. Louis: 654 Pierce Bldg.
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We are pioneers in this business and our engineering department is entirely at your disposal, so give us your layout and we will guarantee to reduce costs and increase your output.



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CABLE SYSTEMS

For Sand Mould Yards Using the Rack and Pallet System

We build and install the best Cable System on the market. It delivers the brick to any part of the racks, it matters not how near or how far away. It turns corners (patented). We also have the best Dumping Table made (patented). One yard saved five men on trucking after we installed our system. They were using nine men; four men are now taking care of the brick. Don't you think it is a good thing?

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And Let Them Tell You More About It

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**DO YOU
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Anything Else?**

**“Brick and Clay Record”
ADVERTISEMENTS Bring Returns.**



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**Tubular Feed Water
Heater, Oil Separator
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is not an experiment but a tried and trusted appliance that the makers are not afraid to

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To heat the feed water to the *boiling point* (210 to 212 degrees) with the exhaust steam without causing any back pressure, also to *extract the oil from the exhaust*, so that the exhaust steam after being passed through the heater can be used for other heating purposes, and the water of condensation for the heating system be returned to the boiler without the *additonal expense* of an *eliminator*.

We are so sure of the OTIS that we agree to pay all cost of a trial—freight, cartage, piping, etc.—if it fails to do all we claim for it.

Catalogue and Prices at Your Service

The Stewart Heater Company, •

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**Duty
23,000,000
Foot Pounds**

Tests have shown that a Pulsometer will develop a duty of over 23,000,000 foot pounds per 100 pounds of coal. Of course, this is not equal to the duty of a modern water works engine, but we don't recommend a Pulsometer for this service. However, it is better than the duty of the ordinary reciprocating pump, which seldom runs over 15,000,000 foot pounds.

Some engineers seem to have the idea that the Pulsometer is a most wasteful type of pump. This isn't true, as the above and other tests will show.

Don't forget that the Pulsometer is a *condensing unit* and in its special field is in a class by itself. It needs practically no attention, requires no lubrication, requires no foundation, and, as it has no rubbing surfaces to wear out, maintenance is practically nil. Furthermore, it is lighter than any other pump for a given capacity and costs less.

With this array of facts before you, can you afford to ignore the Pulsometer on your next pumping job? If you want to know more about this pump, write for our new Pulsometer Handbook.

Pulsometer Steam Pump Co.

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No. 13



QUICK DUMPING

The Archer Automatic Dump, Gable Bottom Car is acknowledged the best for Quick Dumping into bins or over trestles. Both doors open automatically, giving instant discharge of the load.

Built in any capacity to suit requirements.

Archer Cars are generally admitted to be the strongest and most durable. The body of car is made of steel plate reinforced with angles.

Complete equipment of rails, switches, turntables and cars for all requirements of clay haulage.

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WESTERN AVE. AND 34TH PLACE :: CHICAGO, ILL.

A Complete Line of

CLAY-WORKING MACHINERY

INCLUDING

STEAM SHOVELS and DREDGES

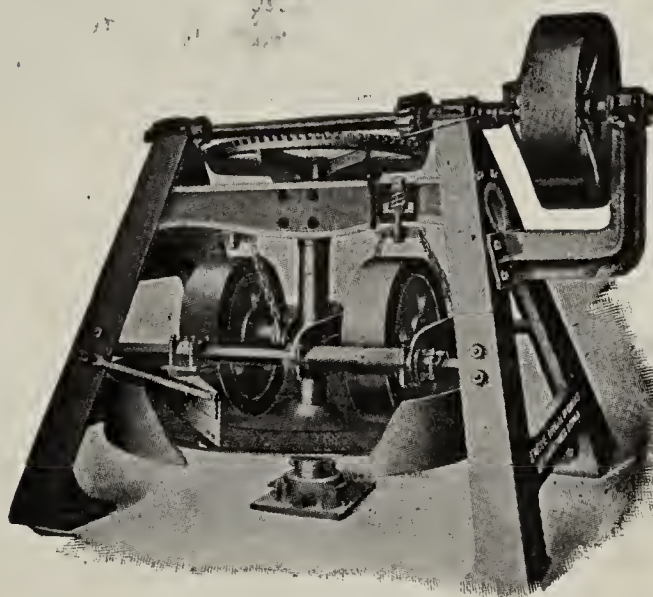
Ask for our latest Catalog and write us or wire us for anything you need on any kind of Brick or Tile Plants.

Scott-Madden Iron Works Co.

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KEOKUK, :: :: IOWA

The "Eagle" Dry Pan



With independent and suspended mullers,
has more

Distinctive Points of Merit

than any other Pan on the market.

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EAGLE IRON WORKS, Builders
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TO PREVENT SCUM APPEARING ON YOUR BRICK, TERRA COTTA, ETC., USE

R. H. Precipitated Carbonate of Barytes

LITERATURE ON APPLICATION

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SCHULTZ EQUIPMENT For Brick, Tile and Terra Cotta Plants

We make a specialty of designing and furnishing complete machinery equipment for all kinds of clay-working plants, including expert engineering service in supervising erection and installation.



Double Pug Mill equipment, especially designed for the perfect preparation of material in the manufacture of terra cotta.

SCHULTZ HEAVY DUTY FRICTION CLUTCH

suitable for all purposes. If you are having clutch trouble, write to us and we will show you the way out of your difficulties. Complete brick plants furnished promptly, including auger machines, pug mills, clay cars and granulator shafts. Cutting and cut steel gears always in stock for brick machines, also granulator knives. Remember, we are brick works engineers and will be glad to advise you regarding any improvements or repairs which you contemplate.

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The "Martin"
BRICK MACHINERY

Modern YARD SUPPLIES

Soft-Mud or Stiff-Mud Processes
Get Our Plans
Dry or Wet Grinding Pans
Barrows and Trucks
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Clay Cars--Dryer Cars
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The Henry Martin Brick Machine Mfg. Co.

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American Sandstone Brick Machinery Co.

321 N. Hamilton Street

Designers and Builders of

SAGINAW, MICH.

SAND LIME BRICK PLANTS



SAGINAW SANDSTONE BRICK FACTORY
Single Press. Capacity, 44000 Brick per day and night.

NOTE

The press in this plant is now entering its tenth year of service. In the year 1908 it averaged 20,190 brick per day of ten hours. In 1909, 21,402 brick. In 1910, 25,682 brick per ten hours.

We can cite you other plants of our make that are doing equally as well.

"New Haven"

☞ Throughout the clay industry in the Eastern States that name signifies **Good Machinery**.

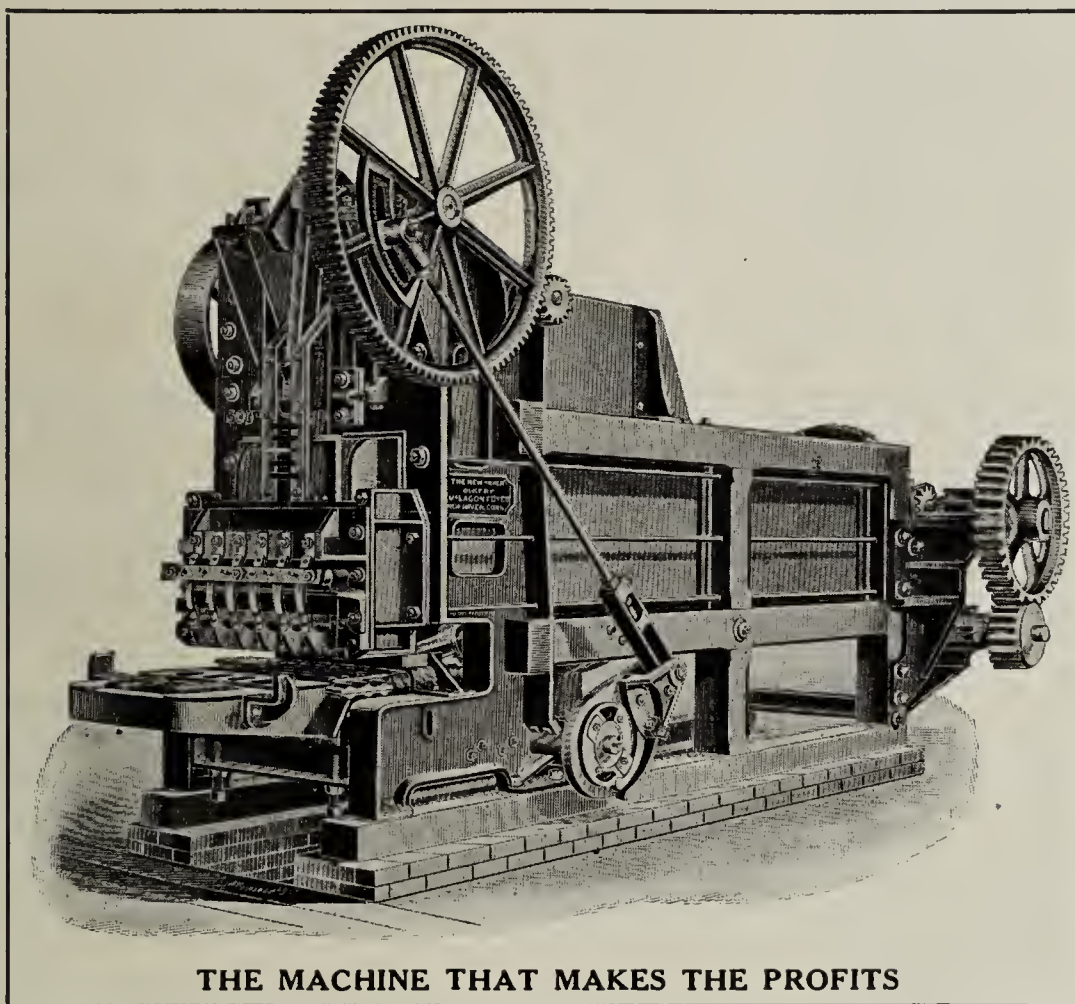
☞ Quality counts nowadays, and you cannot expect to get the most profit out of your plant unless you have machinery that will give you the best results in quantity and capacity.

☞ That's why you find the

"New Haven" Soft-Mud Brick Machine

in so many successful plants. They have tried other kinds, which cost less money, but which they found more expensive because of the repairs, expensive stoppages and lesser capacity.

Only the
Very Highest
Quality of
Material
and
Workmanship
is Put Into
This
Machine



THE MACHINE THAT MAKES THE PROFITS

The
"New Haven"
Holds the
Best Record
for
Largest
Capacity and
Continuous
Operation

☞ The great requirement in brick machinery for the successful brick plant is dependability and that is why the "New Haven" is adopted by so many manufacturers in preference to all others.

☞ We would like to tell you something of the manner in which the "New Haven" brick machine is constructed; the care taken in the purchase of the materials of which it is made, and in the workmanship put into it. We can convince you, if you will give us the opportunity, that this is the machine that you need and that you want.

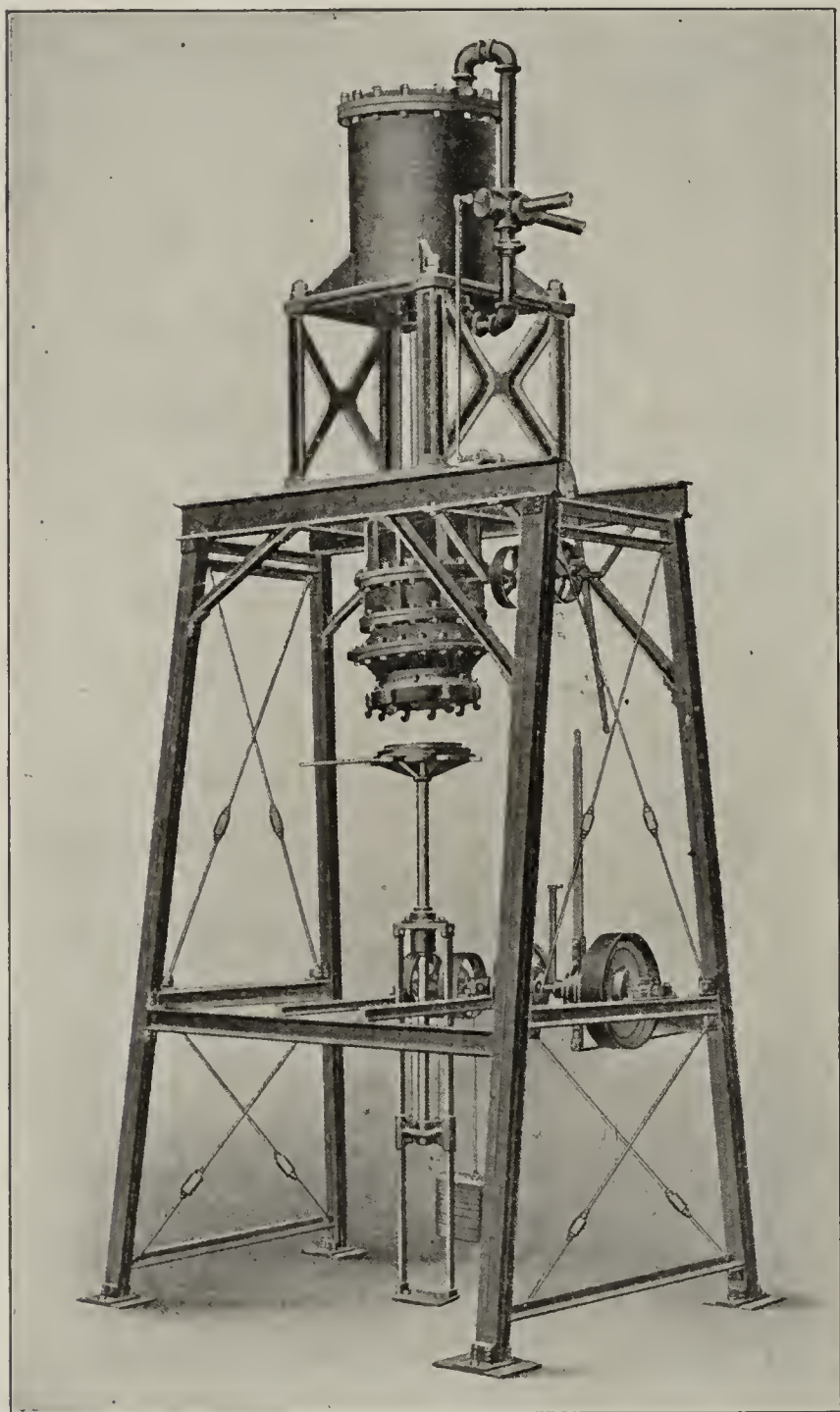
☞ It is not too early now to let us figure with you for spring delivery. "Take time by the forelock." Write to us now anyway and tell us what your plans are for 1912. We may be able to be of service to you.

**THE EASTERN MACHINERY CO. NEW HAVEN
CONNECTICUT**

1912 A Drain Tile Year

THERE are off years in drain tile as in the apple crops, but there is every reason to believe that 1912 will be a banner year in the drain tile industry, and it will be wise for all the drain tile manufacturers to prepare themselves accordingly. Many plants which make good drain tile in the small

sizes are unable to bid on contracts calling for the large sizes of tile, and consequently are shut out of much profitable business. Why not get into line to bid on the big business as well as small business? To make large tile at low cost, all you need is the



Stevenson Press

Many of the largest manufacturers of sewer pipe and drain tile throughout the country are equipped with the Stevenson Press, and it is making "Good" wherever installed.

The Stevenson press is made in a number of different sizes to meet all requirements. It will pay you to figure with us and let us tell you what an equipment for your needs will cost. We can give you some facts regarding this matter which will interest you.

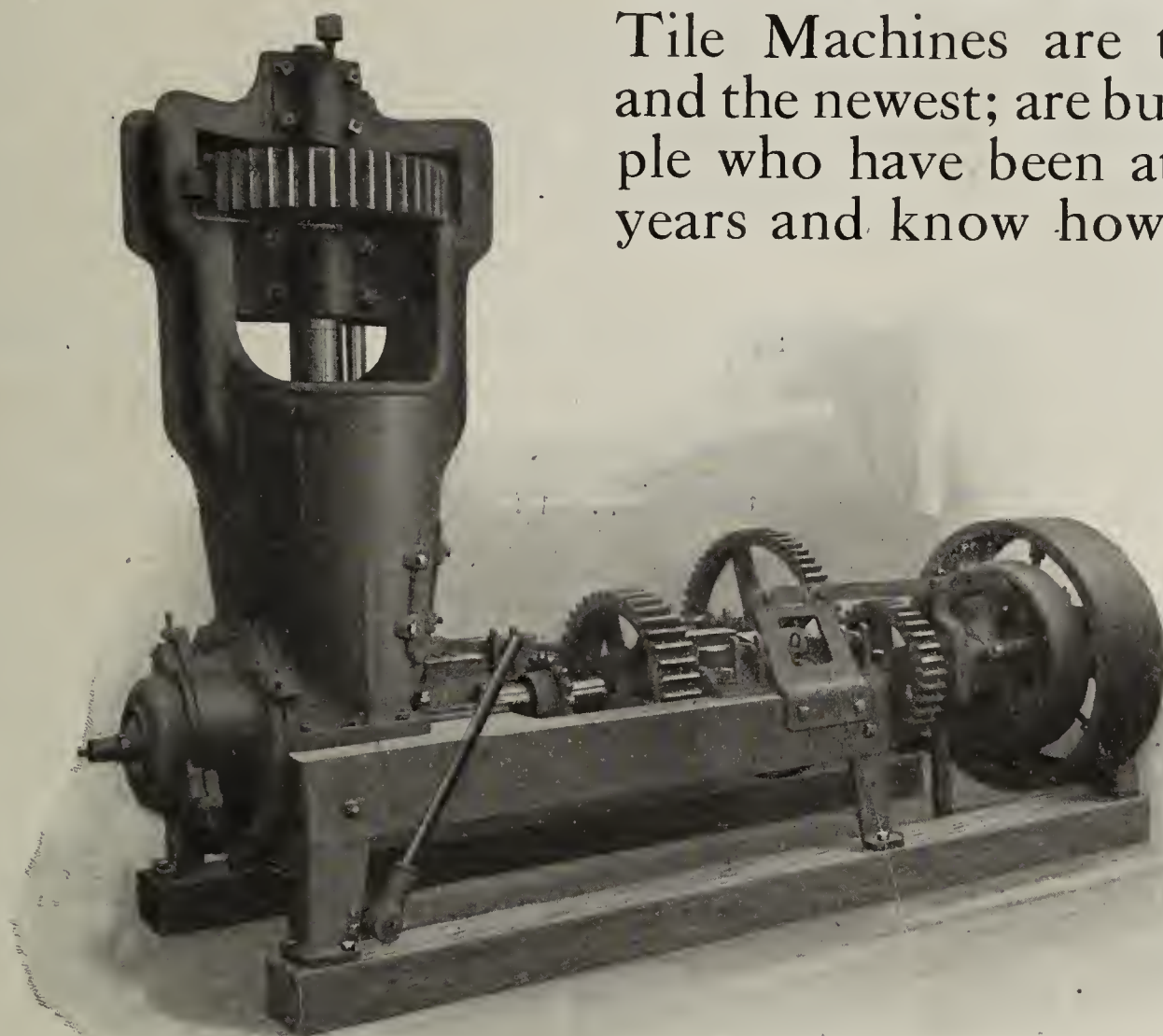
The Stevenson Company

Wellsville, Ohio



DRAIN TILE MACHINES

¶ We build and guarantee both upright and horizontal patterns in several sizes, and can furnish you with just the proper machine to suit your clay, your methods and your local conditions. Brewer Drain Tile Machines are the oldest and the newest; are built by people who have been at it for 50 years and know how to do it.



¶ We also build Horizontal Brick Machines, Automatic Cutters, Crushers, Pug Mills, Feeders, Dry Pans, and a full line of stiff-mud machines.

Ask for Complete Catalog.

H. BREWER & COMPANY, Tecumseh, Mich.

“DETROIT LIKES WELLINGTON MACHINERY”



THERE are some pretty good sized brick plants in Detroit, Mich., and vicinity—prosperous, successful concerns operated by men who know their business. These men do not equip their plants in any haphazard manner. They buy their equipment in a cold-blooded manner after careful investigation.

That is why most of the Detroit plants are equipped with WELLINGTON MACHINERY.

About a million brick are made in the Detroit Territory yearly, and more than half of these are made on Wellington Soft-Mud Brick Machines. Mr. Brickmaker convince yourself that these statements are correct. Write to any of the following Detroit Brick Companies, and see what they have to say:

Wellington Users in Detroit

BURKE BROS.
GEO. H. CLIPPERT & BRO. BRICK CO. (Machines)
WM. CLIPPERT, 1950 Michigan Ave.
JACOB DANIEL & BRO. BRICK CO., 1955 Michigan Ave.
MICHAEL DOWNEY, 1977 Michigan Ave.
J. S. HAGGERTY BRICK CO., Michigan Ave. and P. M. R. R.
THE LONYO BRICK CO. (Machine)
LONYO BROS., Michigan Ave.

LONYO-HORSHA BRICK CO. (Machine)
J. C. McDONALD & SON (Office 15 McGraw Bldg.)
MICHIGAN PRESSED BRICK CO., Lawton Ave. and M. C. R. R.
PORATH BROS., Michigan Ave. and P. M. R. R.
SASS BROS. & STUVE, 433 Lumley Ave.
SCHNEIDER BRICK CO.
WALKER & FRANK, Dix Ave., and Lonyo Road.
F. H. WOLF BRICK CO., M. C. R. R. and Central Ave.
WOLF & DEI

One Brick Company's Experience with Barrows

The Mountain Brick Co., Williamson, W. Va., say: “Yours are the only barrows we have been able to get that would stand the rough handling that a brick barrow gets. Before we used yours, we would have a barrow of the other kind smashed up every day or two. We consider that your barrows will pay for themselves twice in the season over any other barrow we have ever used.”

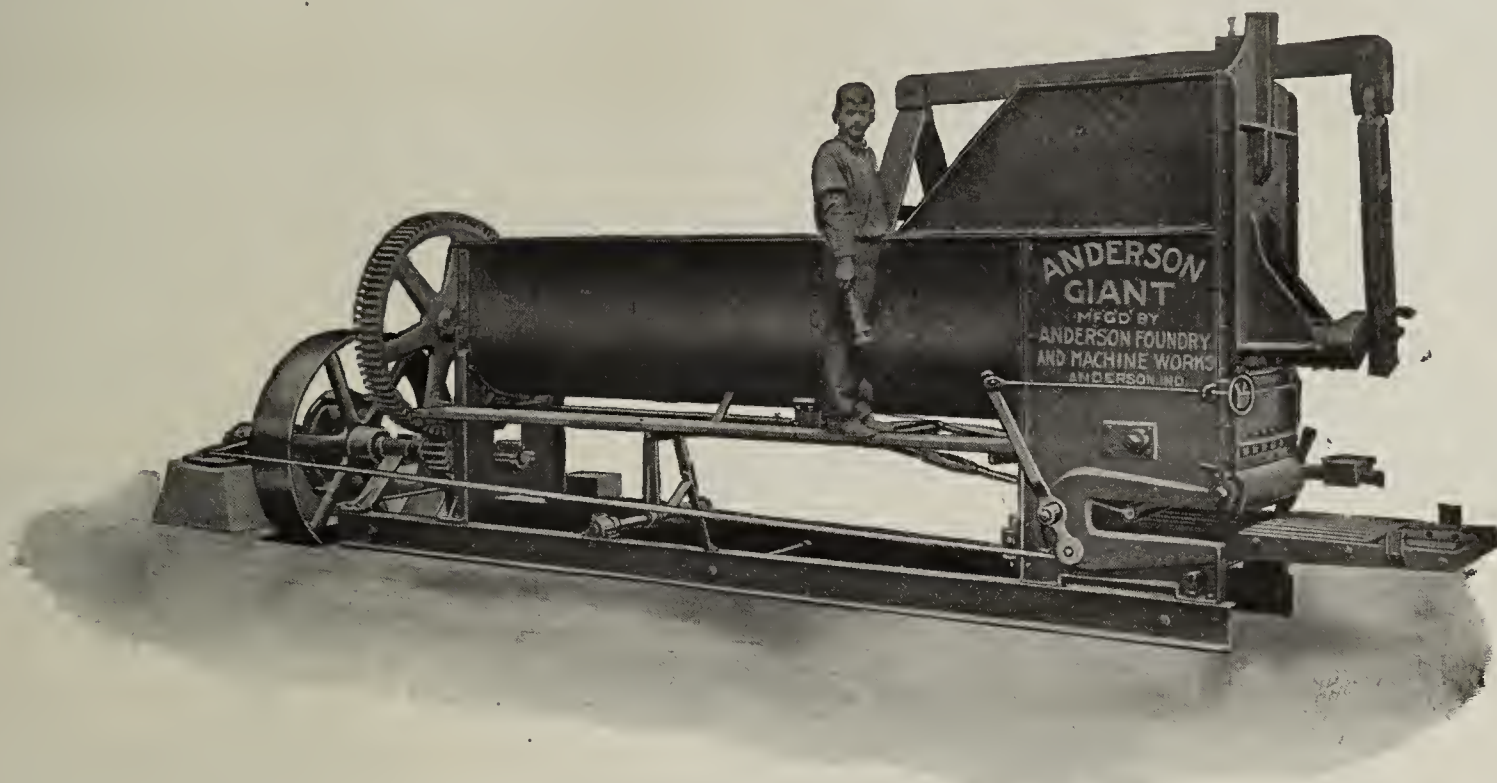
Think this over when you buy your next stock of wheelbarrows. Better talk to us now, so we can have your order ready for spring delivery.

The Wellington Machine Co.

Wellington, Ohio

Anderson "Giant"

There are many reasons why the Anderson "Giant" ranks first among the soft-mud brick machines. These reasons should have your consideration if you contemplate purchasing a new machine in preparation for the next season, and you are simply doing justice to yourself if you investigate these points of merit carefully.



The Anderson "Giant" is built entirely of iron and steel, is extra heavy and strong to meet all requirements; steel geared.

All parts that require adjustment are on the outside and easy of access.

A friction clutch drive pulley is furnished of the most modern improved type, mounted upon a countershaft 5 ft. 6 in. long by 2 15/16 in. diameter.

The operator can start and stop this machine at will without changing his position.

The front of the pressing chamber has a hinged door, which can be opened readily for access to the chamber.

The main bearings are of ample length and provided with oil boxes with hinged cover.

The pug knives and wipers are mounted upon a square shaft and are made in two pieces, any one of which can be adjusted or renewed independently.

The mold push is simple but positive in its action, and there is no jarring motion imparted to the mold slide.

The entire machine is self-contained, requires little foundation work and its operation is practically noiseless.

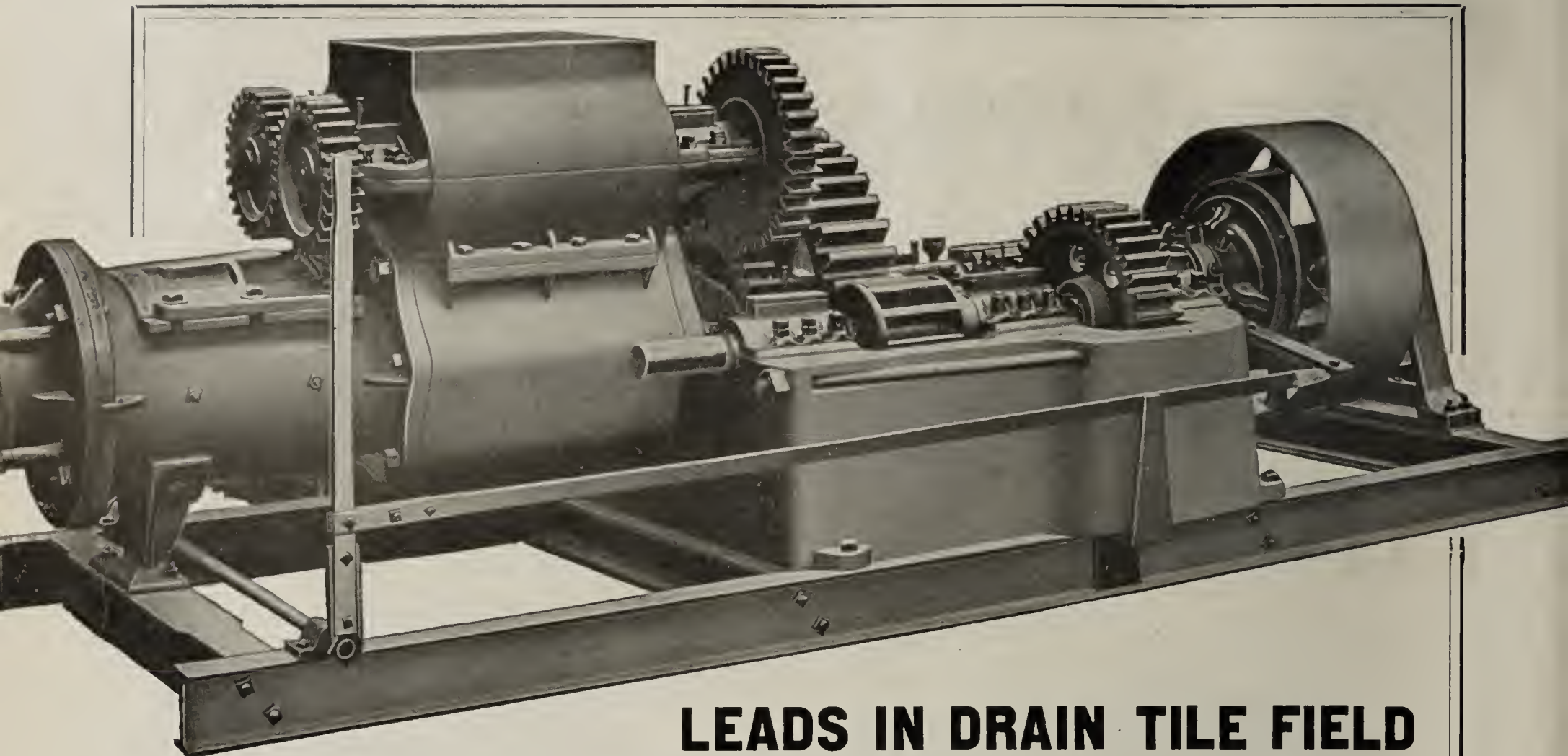
Capacity up to 50,000 per day

Write now for prices and further information as to other particular merits of the "Giant."

Don't forget that we make the "New Departure" Brick, Tile and Hollow Ware Machine. Also the Berg Brick Press. Complete Sand-Lime Brick Plants Installed.

Anderson Foundry & Machine Works

Anderson, Indiana



LEADS IN DRAIN TILE FIELD

The old Madden line of drain tile machinery is famous the country over, and it can be found on the most successful tile plants. Nearly all the plants at Mason City use the Madden machinery in preference to all others.

Arbuckle & Co. manufacture the improved Madden line of drain tile machinery at the Rushville plant, and this plant is better prepared than ever before to serve the interests of the drain tile manufacturers. If you are dissatisfied with the way your tile plant is now running, or if you are contemplating an addition or a new plant,

Talk With Arbuckle

We can not only save you money on the first cost through the use of Arbuckle machinery, but you can be sure of the best product and the smoothest running plant.

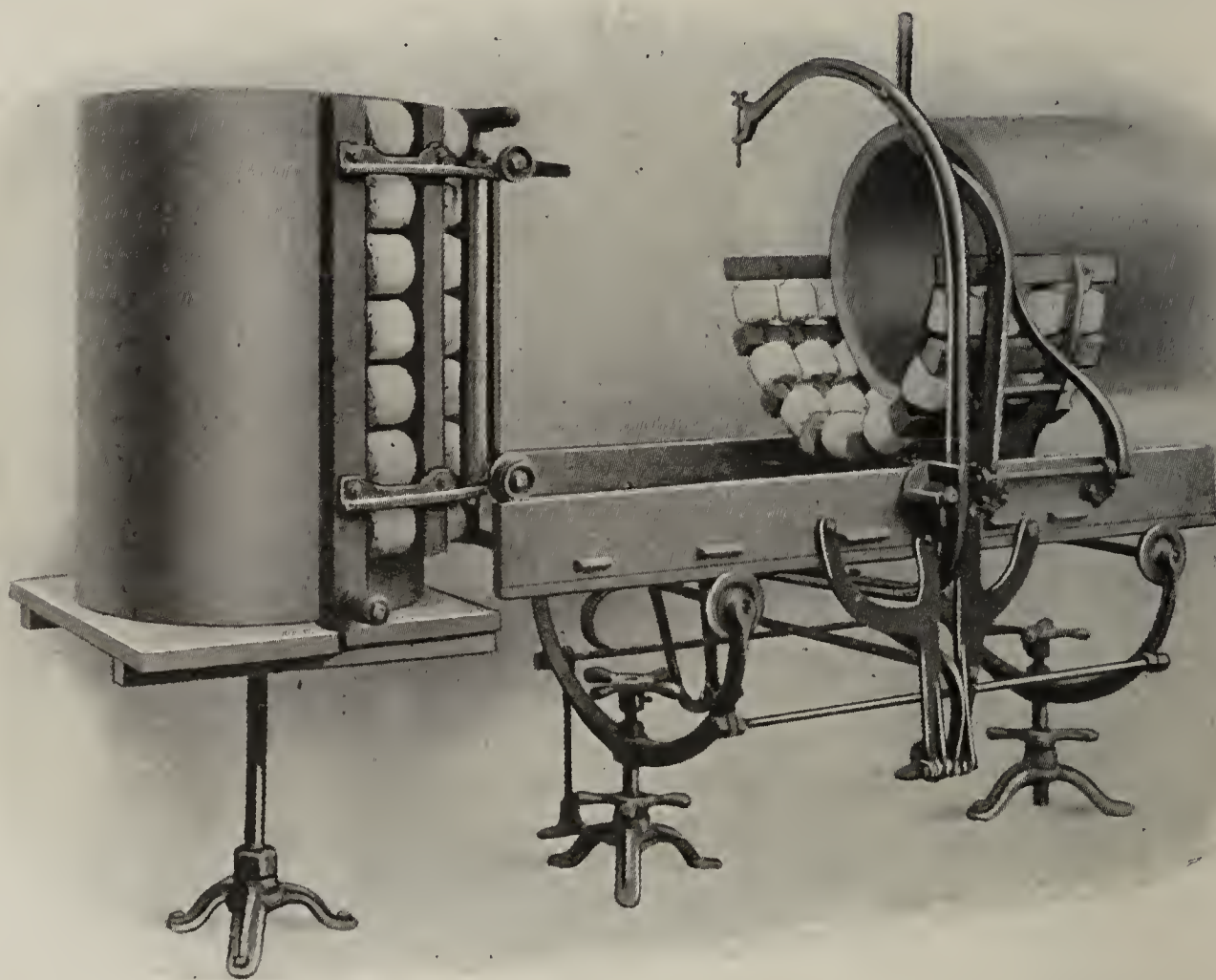
Write to

ARBUCKLE & CO.,

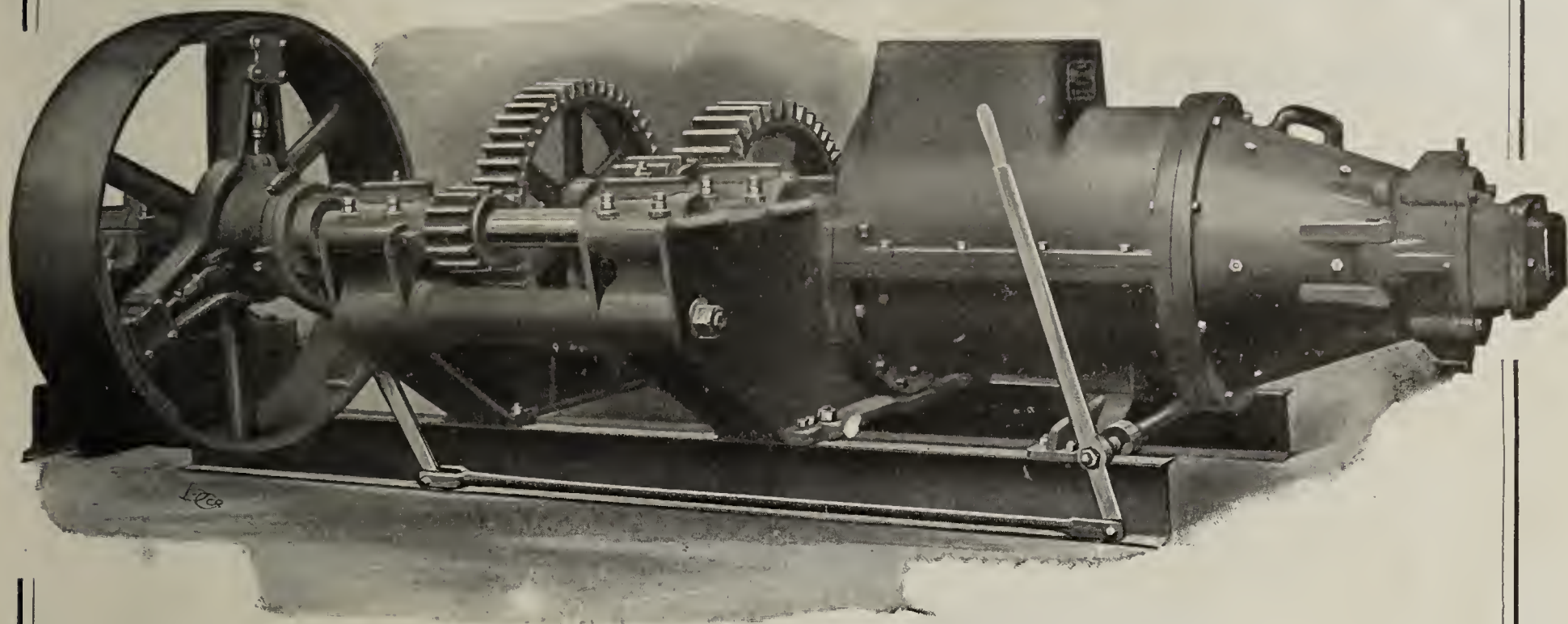
Rushville, Ind.

Successor to Scott-Madden Iron Works Co. (Rushville Plant)

(Sold by Scott-Madden Iron Works Co., Keokuk, Ia.)



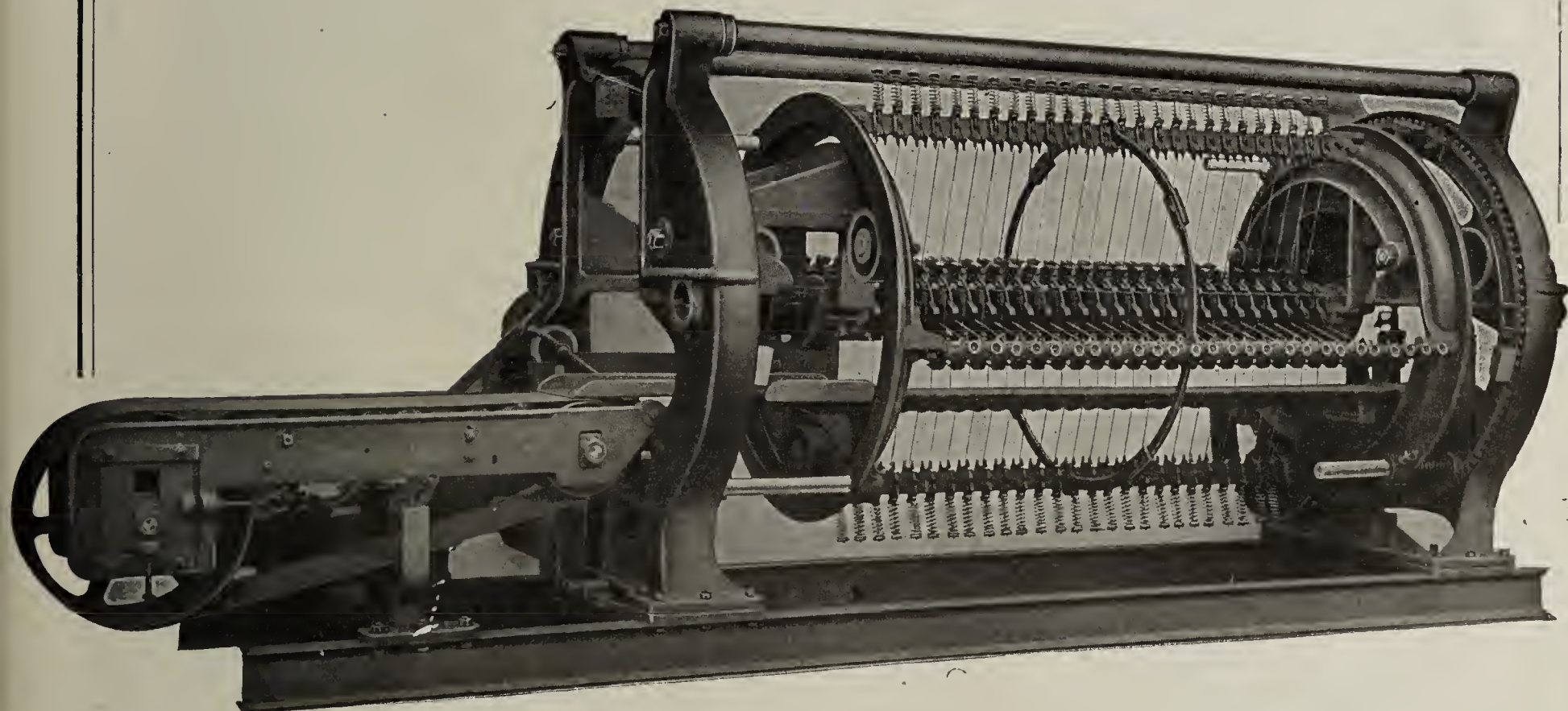
Bonnot Machinery For Satisfactory Service



No. 10 Auger Machine. Capacity 50,000 to 75,000 Brick in 10 Hours.

GET OUR CATALOG.

ASK THOSE WHO USE THEM



Only Rotary Automatic Cutting Table, with Cutting Frame next to Die of Machine. Capacity, 100,000 Brick in 10 hours.

THE BONNOT COMPANY

909 New York Life Building, Kansas City, Mo.

CANTON, OHIO

A Clayworker's Necessity

THERE IS ONE BOOK that every manufacturer of clay products—everyone interested in clayworking should consider absolutely necessary. It is a book which tells

The How and the Why

of clayworking methods and operations. It is the primer, the dictionary and the encyclopedia of clay literature. It was prepared by the greatest of all authorities on clayworking, and is accepted as the standard in clay literature.

You Need Seger's

You need it in your business; you need it to refer to; you need it to make yourself better informed regarding clays, their constituents, their character, their treatment, regarding methods of preparation and mixing, regarding all that constitutes authority of information from technical points of view, regarding the manufacture of clay products.

Seger's Collected Works constitute a mine of knowledge from which you could constantly dig facts which you can use to advantage in your business. This splendid book contains 304 pages, 6 by 9 in. in size, and was especially compiled and translated from the writings of Hermann August Seger, the great German clayworking authority. The book is handsomely bound in silk cloth, stamped in gold. It is a book which should be constantly at your elbow.

This edition of Seger's Collected Works is limited and if you desire to secure a copy, you should order promptly. The cost is only \$3.50 post paid.

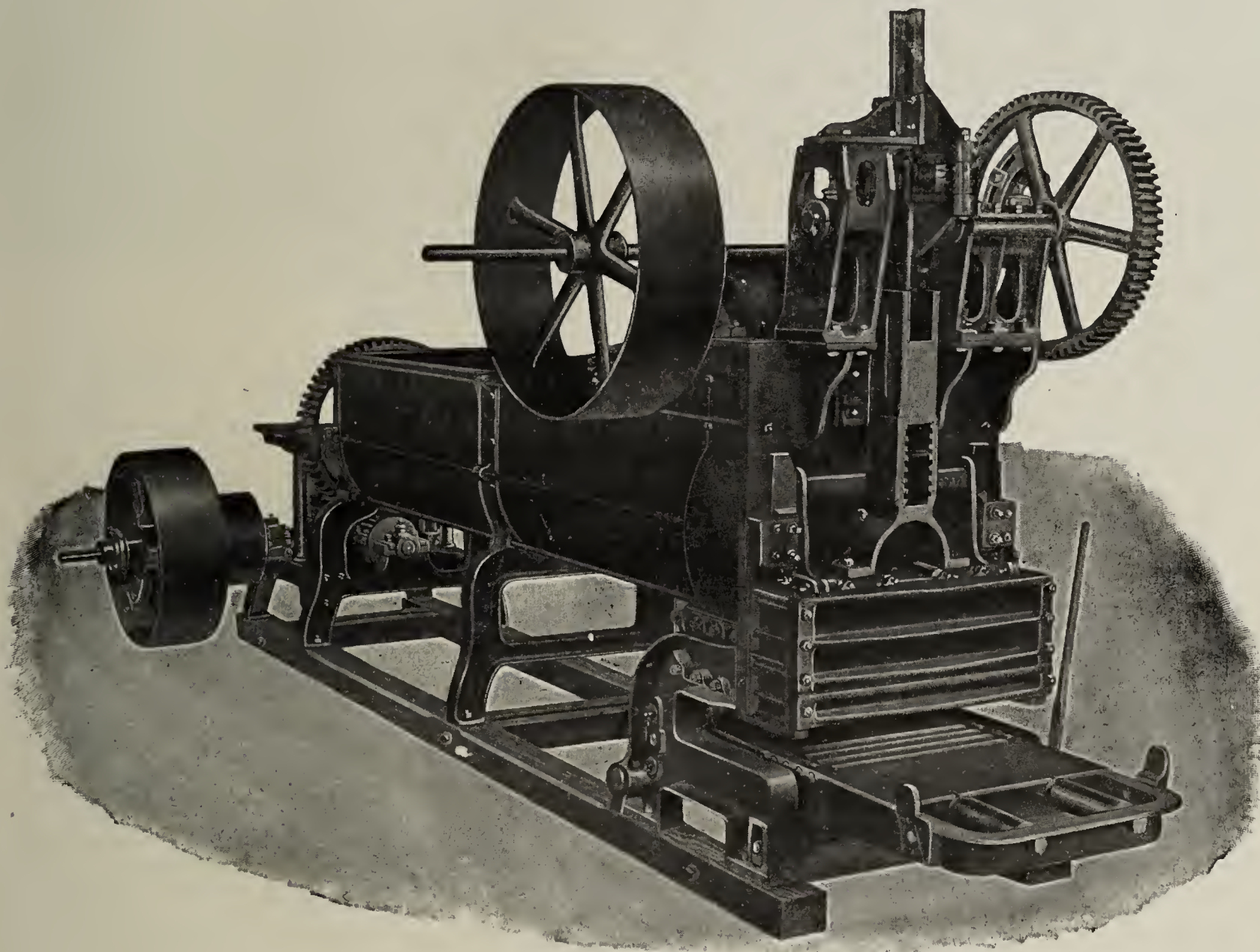
Write at once to the Book Department of

BRICK AND CLAY RECORD

445 Plymouth Court :: CHICAGO

THE BIG FOUR

A Potts Horizontal Brick Machine, Disintegrator, Mould Sander and Granulator

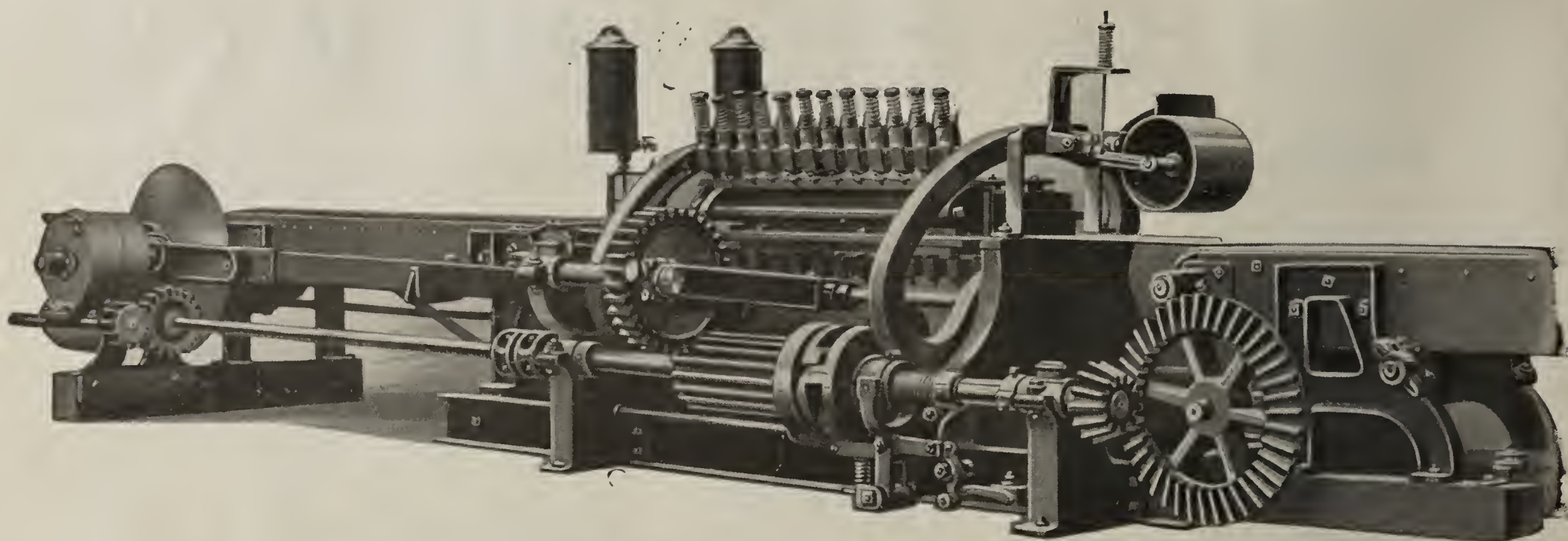


THESE four machines go to make a complete plant for working any clay direct from the bank, with the least possible cost for labor, power and maintenance. Simple in construction, strong and durable. Let us tell you about this machine. We do not make impossible claims, such as, "never break," "never wear out," nor do we make impossible guarantees.

We do claim to make the heaviest and best constructed machine on the market and give a guarantee with every machine which cannot fail to satisfy the most exacting.

J. S. Haggerty of Detroit has used a Potts Horizontal Brick Machine for seven years. This machine has run two shifts of men every day during this time, making 66,000 bricks per day of 15 hours—good brick at that.

C. & A. POTTS & CO., Indianapolis, Ind.



Size 50 Reciprocating Automatic Cutter

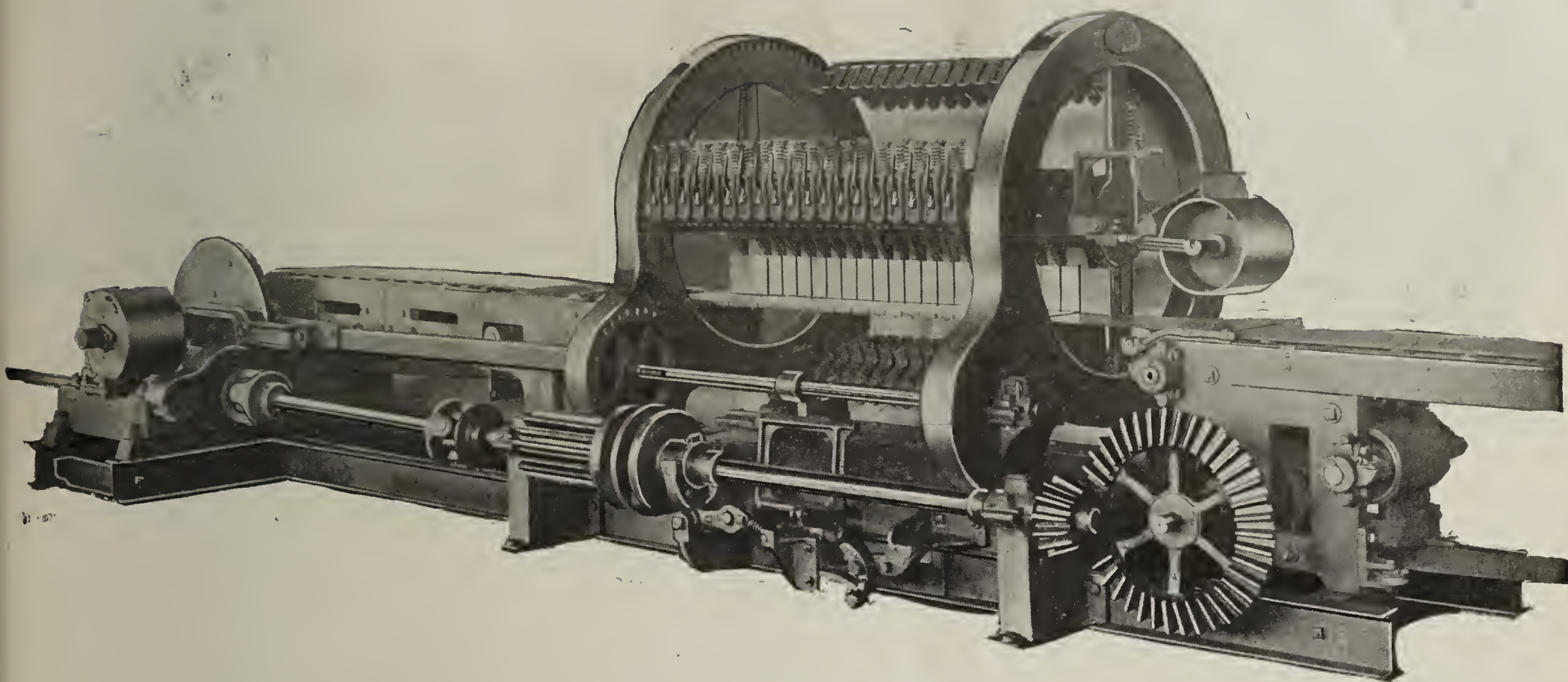
This apparatus, which is of the reciprocating type, is built in two sizes, "50" and "60", for capacities up to 10,000 brick per hour or more. The design is extremely simple. It embodies many of the well tried features of our Rotating Automatic Cutters.

The cutting frame carries only one set of cutting wires and has a swinging movement, avoiding the wear and play common to sliding parts. It is actuated by a crank, giving a smooth, quiet starting and stopping of the cutting stroke. Ample time to renew broken wires while the frame is stationary.

The platens are very easily removed and replaced when the thickness of cut is to be changed. Only 4 bolts to be removed, when the platen can be lifted out. An adjustable upper platen can be furnished to prevent ragging of the upper edges of the brick. This is automatically lifted to clear the clay column after the cut has been completed and is returned to position in time for the next cut, avoiding any tendency for the clay to become wedged.

Either size Cutter is made to suit a variety of work—and can also be especially arranged for cutting the Dunn Wire-cut Lug paving blocks. The Size 60 is built special to accommodate the largest sizes of fireproofing, etc.

E. M. FREESE & CO., Galion, Ohio



Size 20 Rotating Automatic Cutter

We build rotating automatic cutters in various sizes and capacities. They are successfully used for solid brick of ordinary sizes, also for hollow ware, fireproofing, radial chimney blocks, etc., up to $13\frac{1}{2}'' \times 7\frac{1}{2}''$.

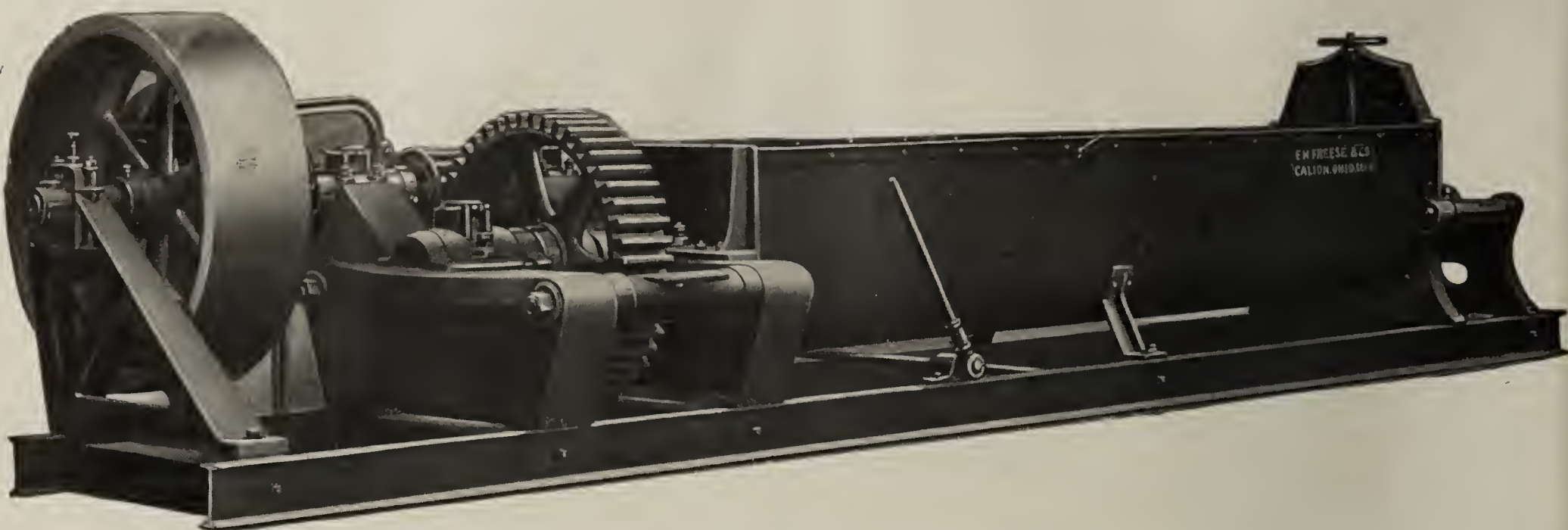
The above illustration shows the Size 20 Cutter, which is an improved model of our well-known Size 16. It is intended for capacities up to 7,500 standard size brick per hour—18 brick are cut at each cut. At this speed the cutting reel makes only a little over two revolutions per minute, remaining stationary between cutting strokes. It is never necessary to stop the brick machine to renew broken wires, as this gives ample time.

The cutting apparatus, including drive for separating belt, is entirely self-contained, being mounted upon one set of I-beam sills, assuring permanent alignment of all parts. The measuring and separating tables are built with iron or steel sides.

Cutting reel and carriage are carried on rollers requiring little or no oiling. Carriage is positively moved with the clay by an accurate cam. Clutch mechanism is the simplest possible. Wearing surfaces have renewable steel plates.

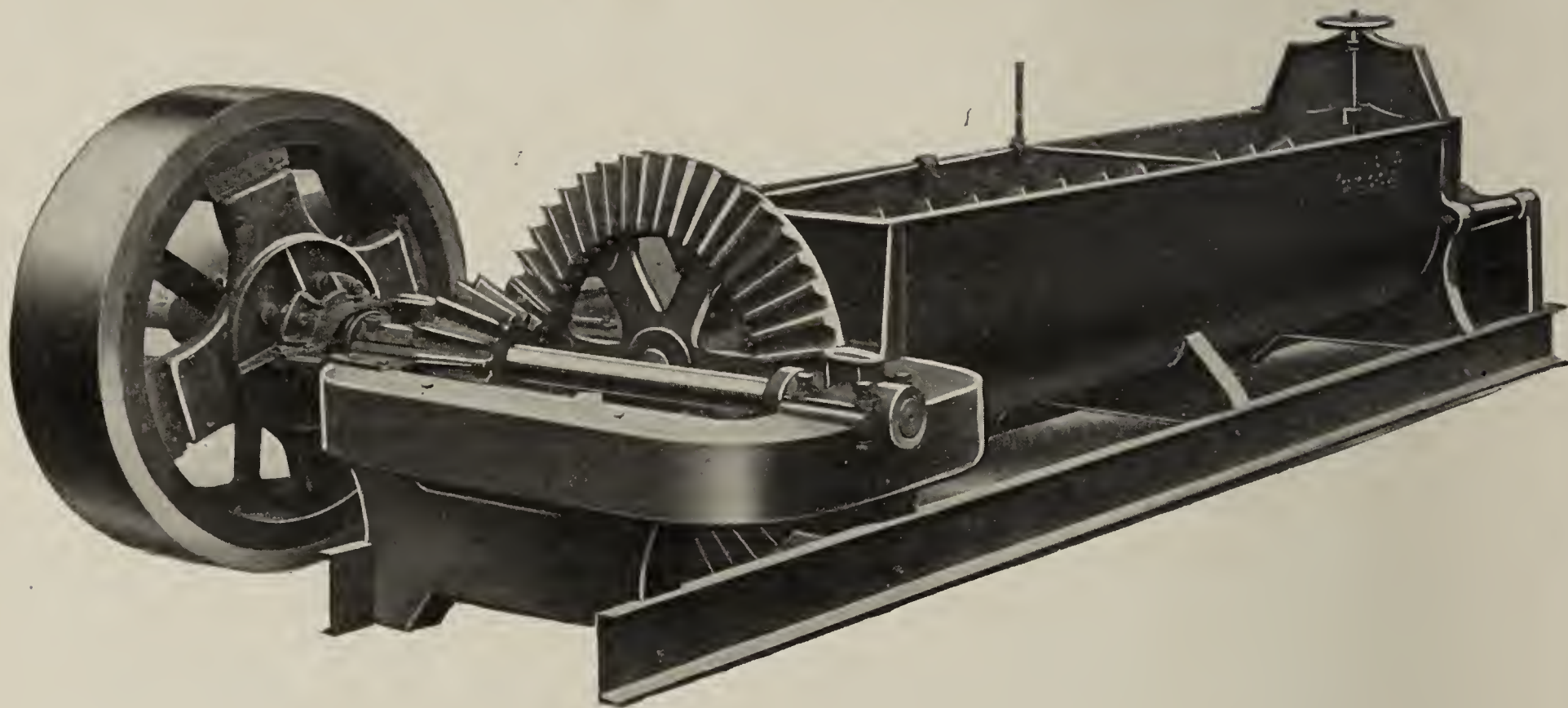
Particular attention is called to the platen construction. The platen is cast in one piece of tubular cross section and is very rigid. Surfaces covered with renewable steel plates, insuring fine slots. The angle of the cutting wires has been changed to give perfect edges on the brick. Built to give long service without skilled attention. Complete description will be furnished on request.

E. M. FREESE & COMPANY, Galion, Ohio



We are building Pug Mills in great variety—more than forty patterns and sizes. The above is an example of a heavy, direct-gear machine of large capacity, designed for most exacting requirements.

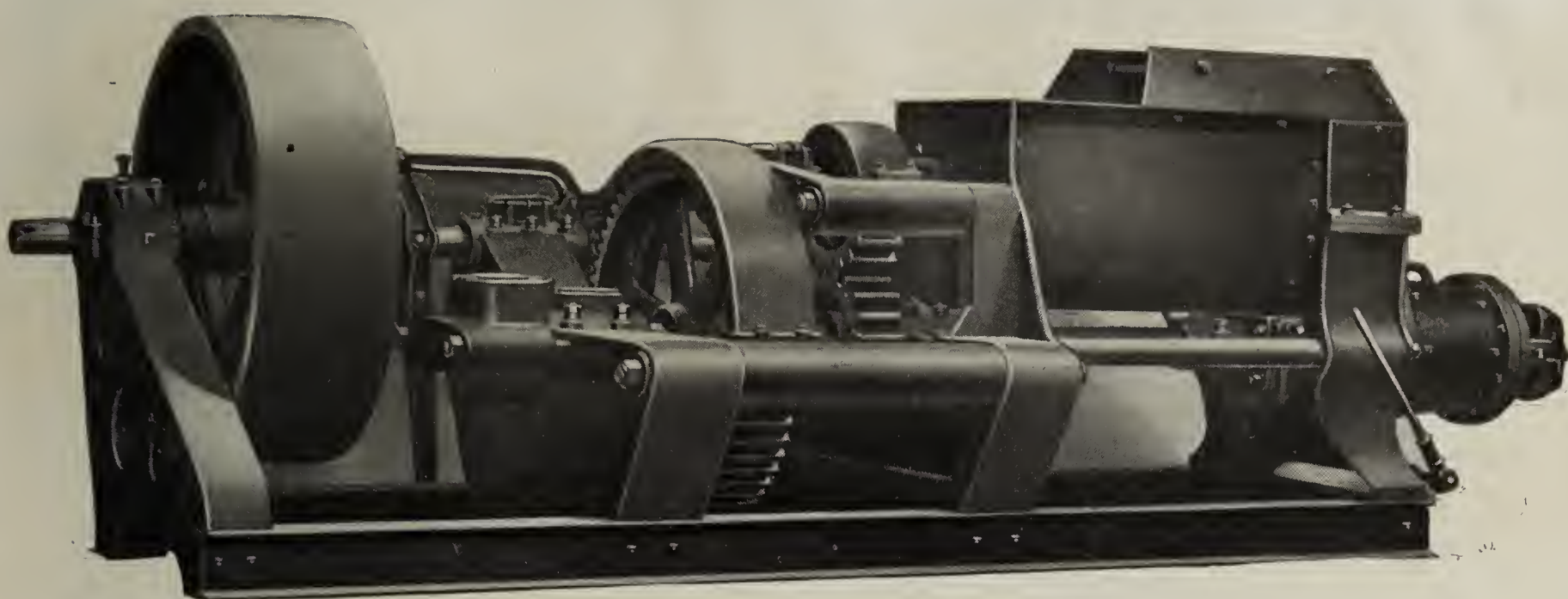
Let us send you particulars



This is an example of a bevel geared Pug Mill built in several sizes. These machines embody many desirable features. We furnish both bevel and spur gear Pug Mills of all sizes, arranged to discharge at either end, as may be specified. We believe we are in position to furnish more value for the price than can be obtained elsewhere.

Write us now

E. M. FREESE & COMPANY, Galion, Ohio



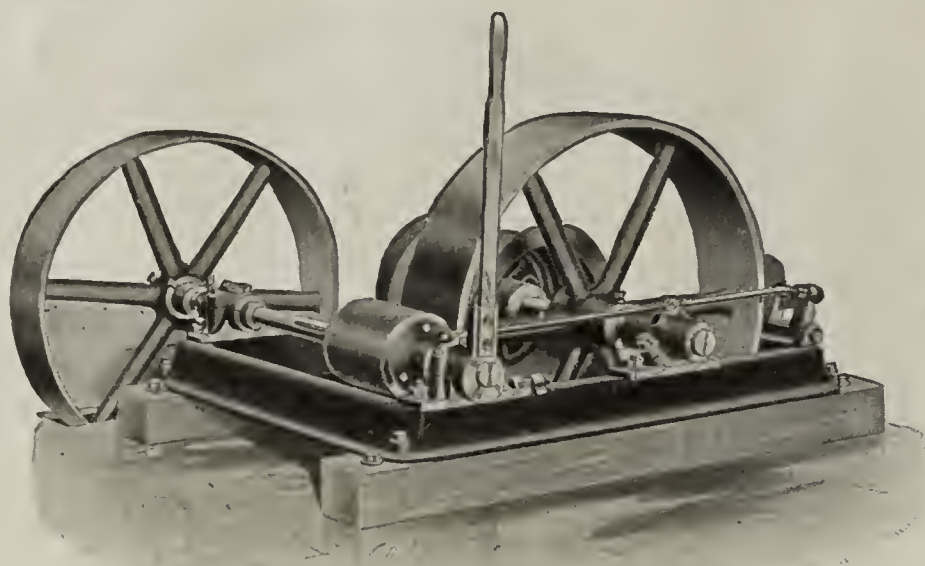
Model "K" Auger Brick Machine

This machine has several features of merit. The construction is simple. The parts conveniently accessible. Each of its three shafts has three journal bearings, insuring substantial support for the gearing and more permanent alignment. The feeding chamber is open its entire length and the auger chamber is kept positively and uniformly supplied with clay. The gearing is designed for smooth and quiet operation. All the shafts are of large diameter and the proportions throughout are extremely heavy. The workmanship and material are of the best.

Intended for first-class product and economical operation.

E. M. FREESE & COMPANY, Galion, Ohio

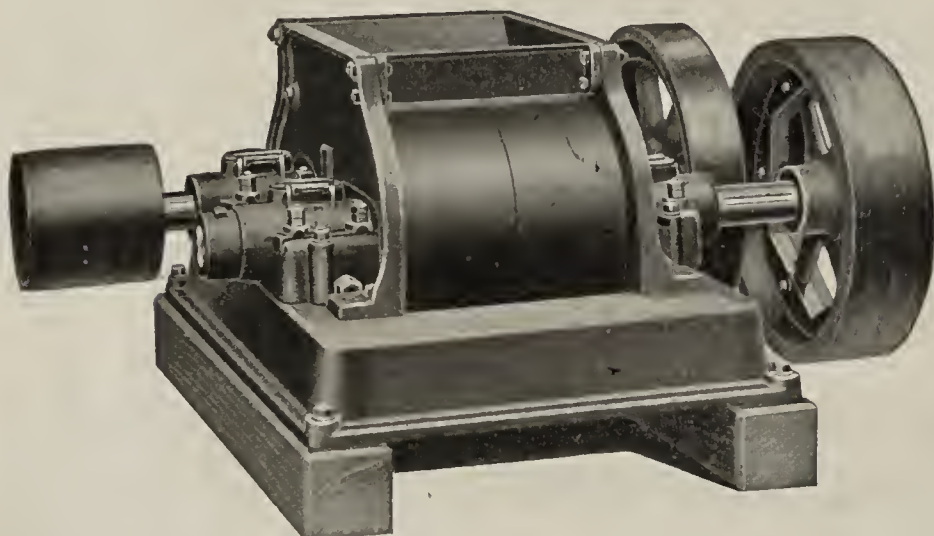
A Good Drain Tile Outfit for Making Ti



Winding Drum



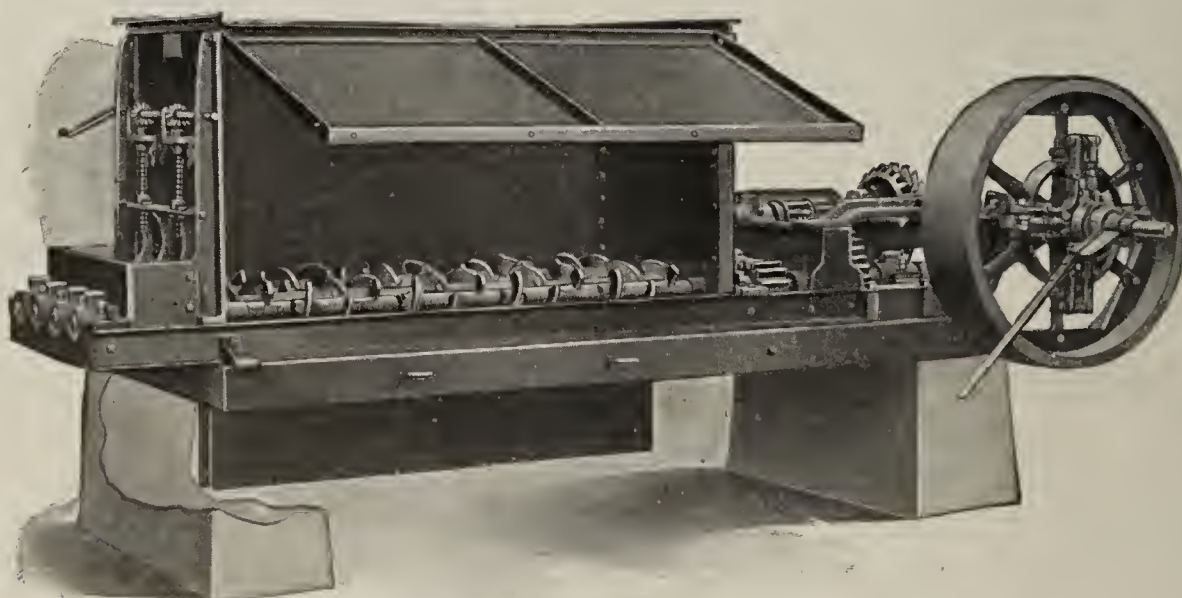
Clay Car



Disintegrator



Imperial Machine Cross Section

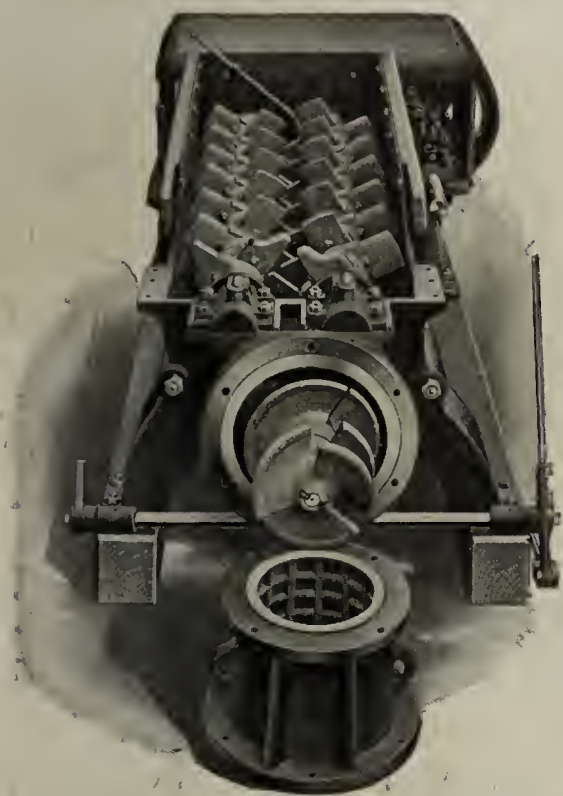


Automatic Clay Feeder

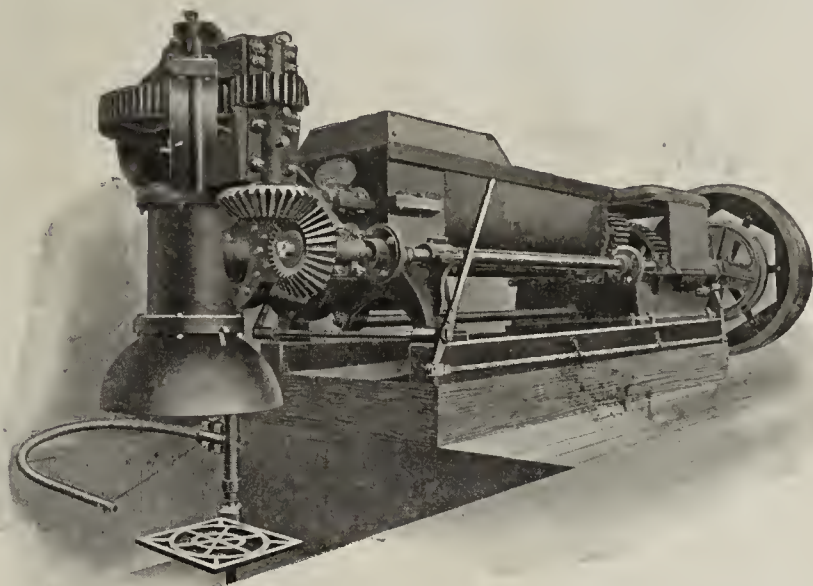
*Write to The
J. D. Fate Co.
for Catalog*

**THE J. D. FATE COMPANY,
Manufacturers Equipment Co.,**

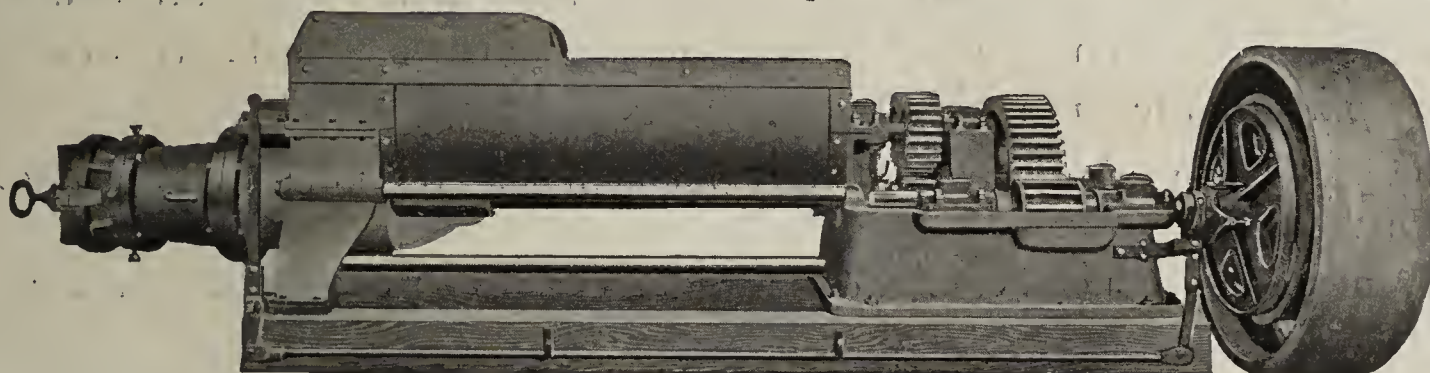
le From Three to Twenty-Four Inches



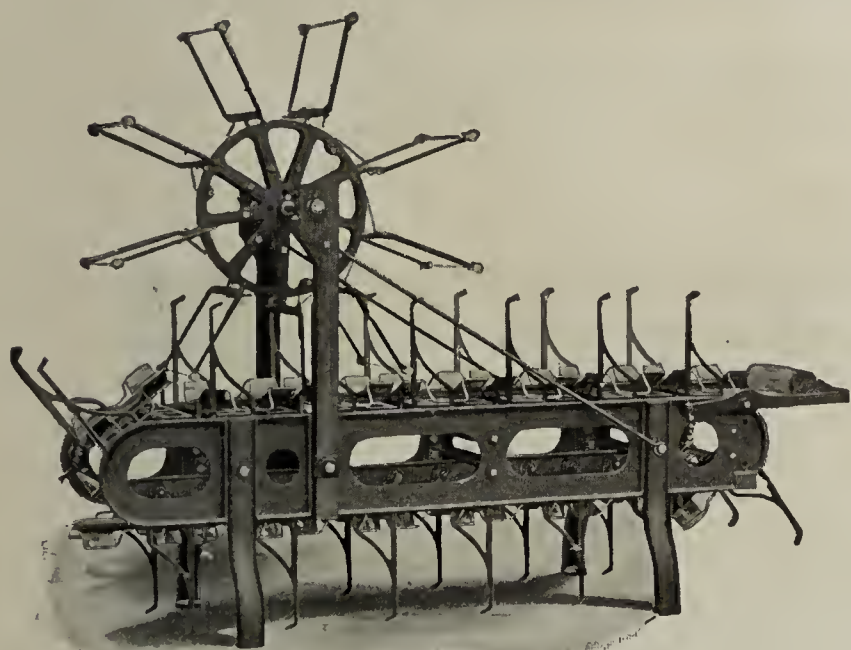
Imperial Machine, Interior View



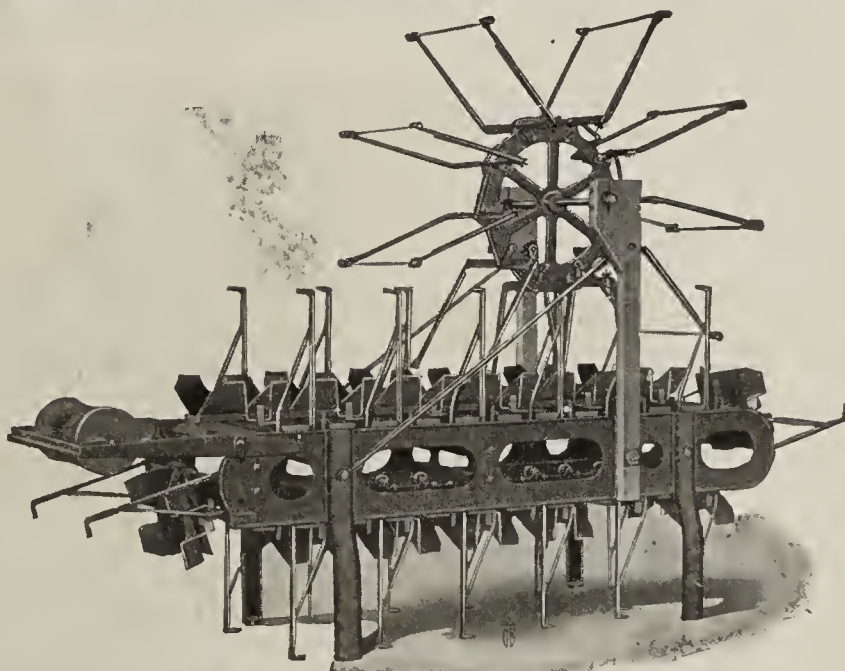
Imperial Machine with Vertical Attachment for Large Tile



Imperial Machine.



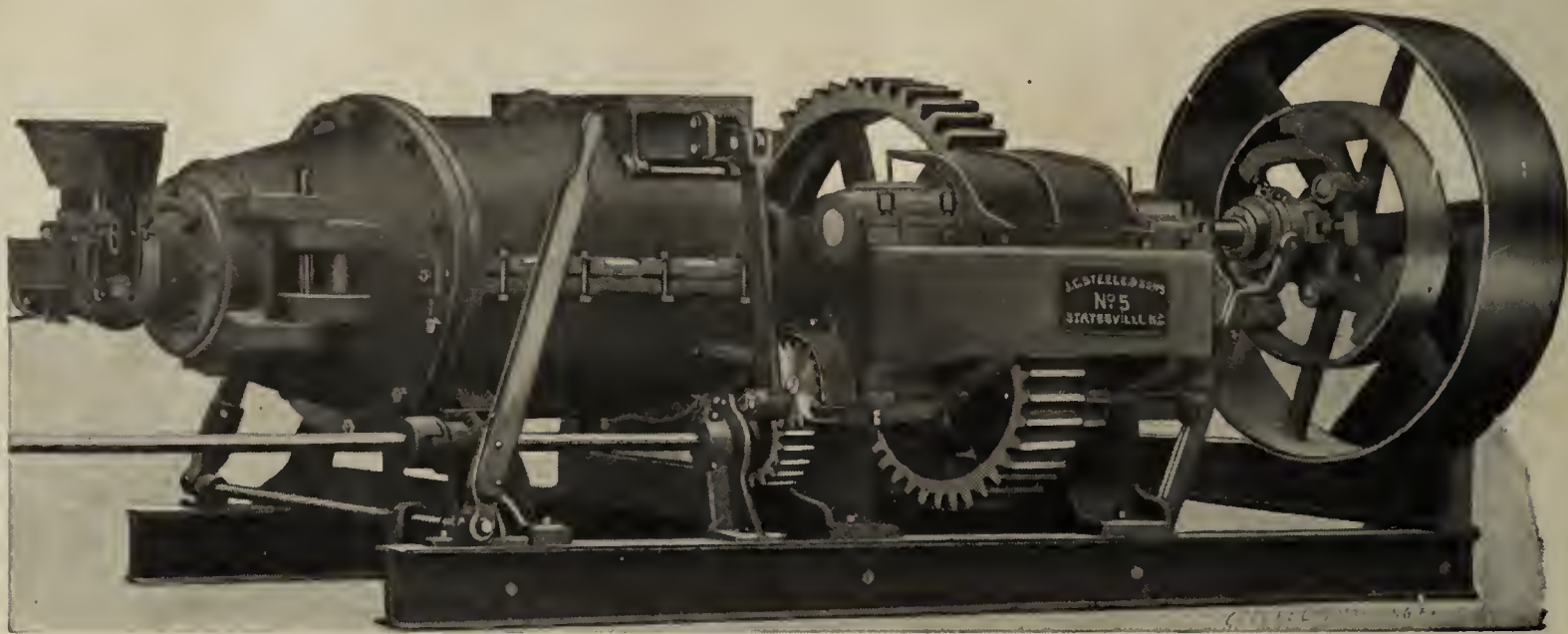
Bensings Automatic Tile Table to Cut 3 to 8" Tile



Bensing Automatic Tile Table to Cut 10 to 12" Tile

Plymouth, Richland County, Ohio
Dayton, Ohio, Sales Agents

A STEELE MACHINE

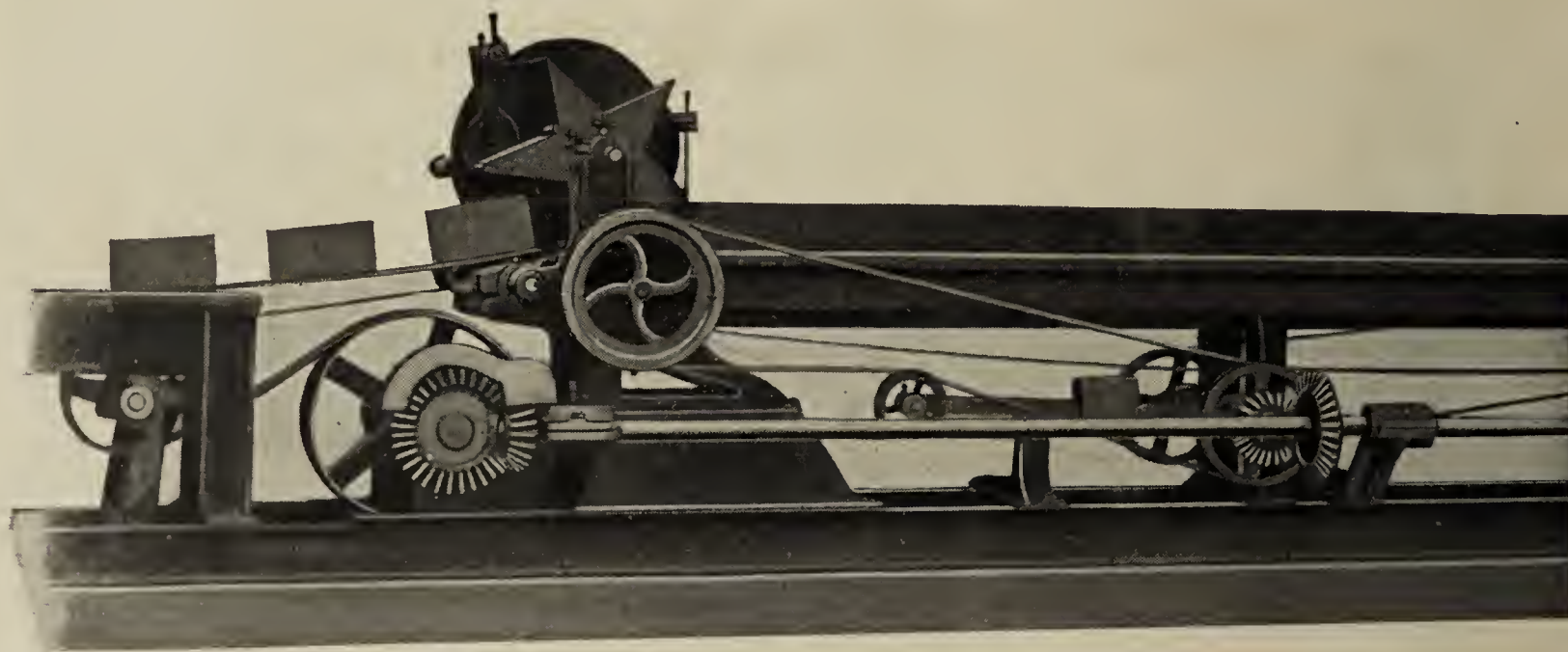


Adjustable hardened steel knives, steel shaft with renewable iron shell, main bearing 9 inches in diameter, the end thrust held by U bolt equalizing the pressure. The front is fitted with a renewable chilled bush, steel cut gears and other parts liable to break made of steel.

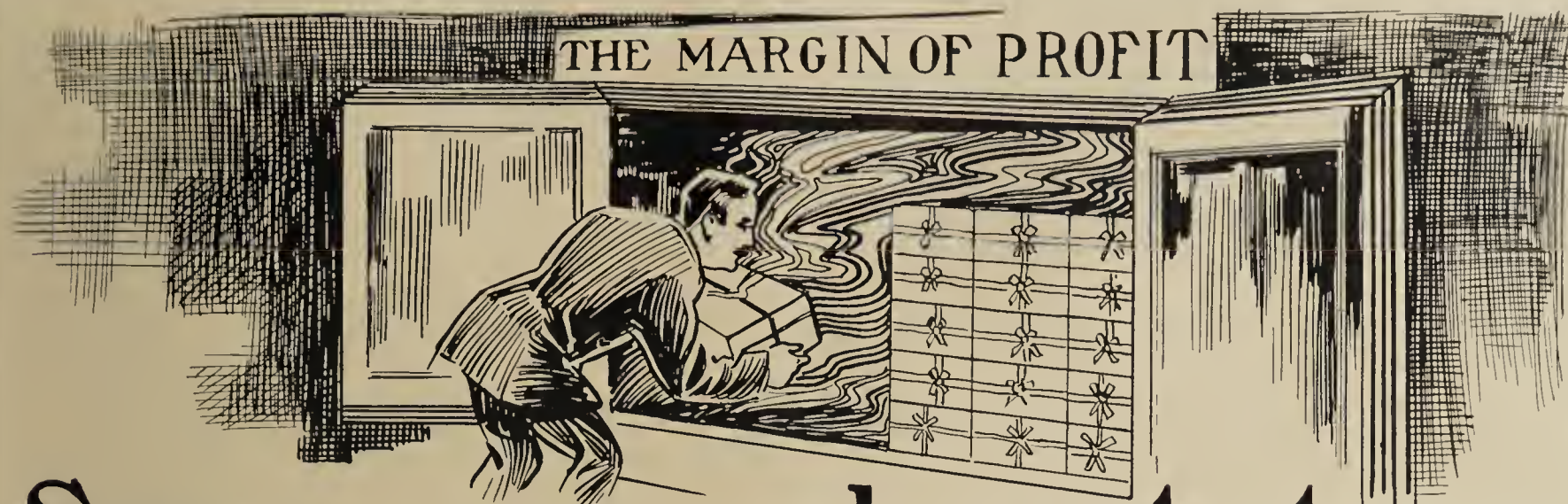
Provided with opening between barrel and main box preventing clay from working into the box.

Guaranteed to produce better and straighter cut brick at less cost than any other for up-keep.

If you have a clay that is too much for the machine you are trying to work, let us hear from you.



J. C. STEELE & SONS STATESVILLE, N. C.



Save your exhaust steam

We do not mean to put it away in the safe in nice packages, the way this gentleman is doing, but to utilize it for drying your brick or tile. You are certainly a spendthrift if you waste your exhaust steam, for steam costs money; and nowadays the successful men are those who eliminate as many as possible of the losses and wastes from their yards. Drying with steam is no new proposition, but it is continually growing in popular favor because it has been proved beyond question that steam offers the best medium for drying green clay ware. Through its use you reduce losses in spoiled brick and tile to the lowest point. Your exhaust steam can be turned into real money if you have a

NATIONAL DRIER

Which is the original exhaust steam drier.

Its novel arrangement of the radiating surface insures the maximum results for the steam consumed. This for the reason that the heat is created in the discharging end, and, its only escape being at the receiving end, it must travel the full length of drier and come in contact with the drying product the full length of the drier.

HANDLE YOUR BRICK BUT ONCE

By the National System you load your brick on cars at the machine, run the cars through the drier and then into the kilns, where they are thrown to the setter direct from the cars.

There is no radiating surface at the receiving end, thus the green brick or tile are not subjected to the rarified heat direct from the coils, which would produce checking.

Our "No Cure, No Pay" Guarantee

Our claims are backed up by a guarantee worth 100 cents on the dollar, and payments are made altogether contingent upon the fulfillment of this guarantee. You assume no risks, and our proposition is just like insuring your profits. Write for particulars regarding this guarantee.

We manufacture a full line of cars, and carry in stock all kinds of drier equipment.

THE NATIONAL DRY KILN COMPANY
1118 E. Maryland Street **INDIANAPOLIS, INDIANA**



166



241



230



134

A WORD TO THE PURCHASING AGENT:

The persuasive tongue and strong personality of the salesman often secures orders for goods which are not *Built to Last*. At other times, a price so low is quoted that it closes the deal, the purchaser overlooking the obvious fact that the dealer must make profit, and if the price is so low that there is not a legitimate profit, then the temptation is to make an illegitimate profit. A one-thirty second of an inch less than specifications in the dimensions of the steel is hard to detect but it means a whole lot in the life of the car.

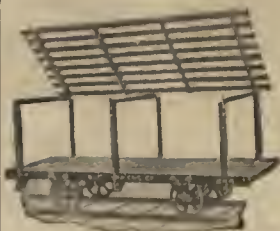
The "Lakewood Line" is sold under the absolute guaranty that the specifications are lived up to. That is the reason of the Trade Mark "*Built to Last*."

Ohio Ceramic Engineering Co.,

Cleveland, Ohio

Chicago—1015 First National Bank Bldg.

Pittsburgh—1205 Fulton Building



167



244



188



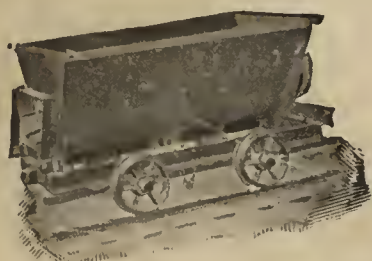
Repress



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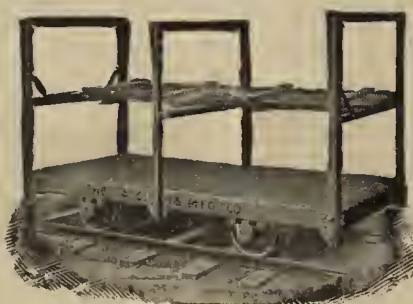


247



No. 217-S

Side Rocker Dump Car, small capacity. Self-Oiling Wheels.



No. 1200

Triple Deck Dryer Car



No. 913

Double Track Electric Transfer Car

THE ATLAS CAR & MANUFACTURING CO.

CLEVELAND, OHIO

Manufacturers of

**Dryer Cars, Dump Cars, Locomotives,
Turntables, Track, Switches, Etc.**



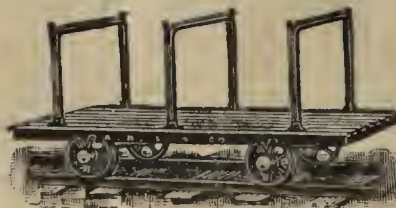
No. 6550

Electric Locomotive



No. 145-C

Pressed Steel Top, Ball Bearing Turntable; Patented.



No. 126

Double Deck Steel Car shown without upper Deck.



No. 217-E

Side Dump Car Equipped with Motor.



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